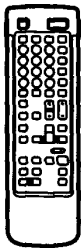


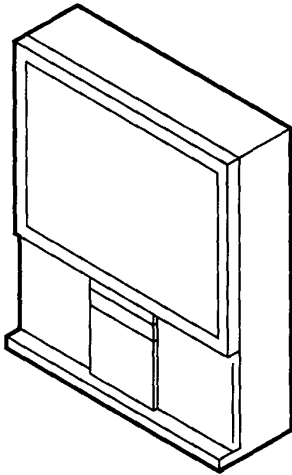
# SERVICE MANUAL

# RX1 CHASSIS

<u>MODEL</u>	<u>COMMANDER</u>	<u>DEST.</u>	<u>CHASSIS NO.</u>	<u>MODEL</u>	<u>COMMANDER</u>	<u>DEST.</u>	<u>CHASSIS NO.</u>
KP-46S3	RM-831	AEP	SCC-J76A-A				



RM-831



















KP-46S3



※ Please file according to model size. .... ■

PROJECTION TV ( 100Hz )  
**SONY®**

## SPECIFICATIONS

Television system	B/G/H,D/K,I,L	
Colour system	PAL/SECAM and NTSC 3.58/NTSC4.43 (VIDEO IN)	 4, S video inputs - 4 pin DIN  (L, R), audio inputs - phono jacks
Channel coverage	See " Receivable channels and channel displays " at the bottom.	 S video outputs 4-pin DIN (monitor out)  (L, R) , audio outputs - phono jacks (fixed)
Projected picture size	116cm (46 inches)	Front
Terminals	133cm (53 inches)	 3, video input-phono jack  (L, R) , audio inputs-phono jacks
Rear	Center speaker input terminals, 2 terminals  (L,R), audio outputs - phono jacks (variable)  1, 21-pin Euro connector (CENELEC standard) -inputs for audio and video signals - inputs for RGB - outputs of TV audio and video signals  2/  2, 21-pin Euro connector - inputs for audio and video signals - inputs for S Video - outputs for audio and video signals (selectable)  2, S video inputs - 4 pin DIN  (L,R), audio inputs - phono jacks  4/  4, 21-pin Euro connector - inputs for audio and video signals - inputs for S video - outputs for audio and video signals (monitor out)	 3, S video input-4-pin DIN  , headphone jack - stereo minijack 2 x 30W (music power) 2 x 15W (RMS) Power consumption 225W Dimensions(WxHxD) KP-46S4K : 1104 x 1267 x 512 mm KP-53S4K : 1164 x 1335 x 650 mm Weight KP-46S4K : 79kg KP-53S4K : 90kg Supplied accessories RM-831 Remote Commander One IEC designation R6 battery Other features Digital comb filter (High resolution) PIP (Picture-in-picture) FASTEXT NICAM (B/G, L, I) B/G STEREO D/K STEREO

Design and specifications are subject to change without notice.

Design and specifications are subject to change without notice.

## Receivable Channels and Screen Displays

	Receivable channels	Indication on the screen
PAL B/G/H	E2..12 21..69	C02 C03 C04..C12 C21..C69
CABLE TV (1)	S1..41	S01 S02..S41
CABLE TV (2)	S01..S05 M1..M10 U1..U10	S42..S46 S01..S10 S11..S20
ITALIA	A B C D E F G H H1 H2 21..69	C11..C69
SECAM D/K	R01..R12 R21..R60	C02..C12 C21..C60
SECAM L	F2..F10 F21..F69	C01..C12 C21..C69
PAL I	B21.. B68	C21..C68

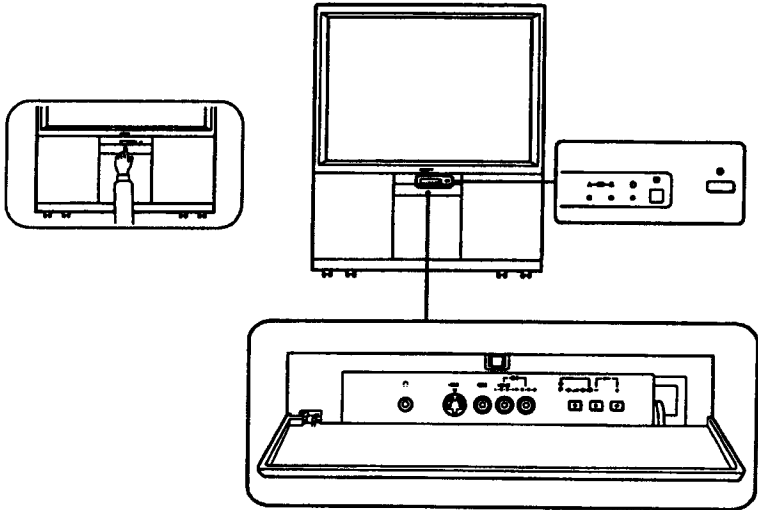
Overview

SECTION 1  
GENERAL

The operation instruction mentioned here are partial abstracts from the Operating Instruction Manual. The page numbers of the Operating Instruction Manual remain as in the manual.

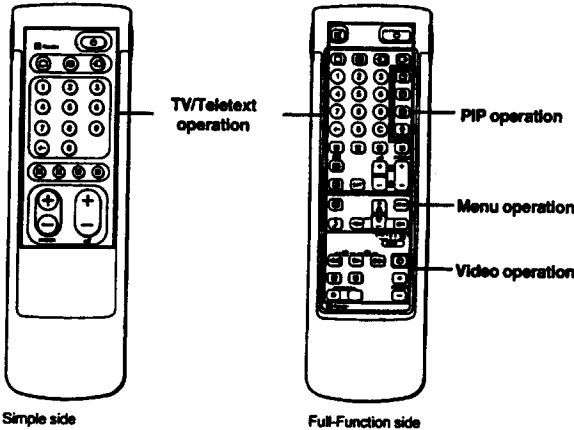
This section briefly describes the buttons and controls on the TV set and on the Remote Commander. For more information, refer to the pages given next to each description.

TV set-front



Symbol	Name	Refer to page
ⓘ	Main power switch	7, 13
⓪	Standby indicator	13
A-CD-B	Stereo A/B indicators	15
Ⓜ	Headphones jack	22
⓪ 3, -⓪ 3, -⓪ 3	Input jacks (S video/video/audio)	22
Ⓜ	Function selector (Programme/volume/input)	14
Ⓜ	Adjustment buttons for function selector	14

Remote commander RM-831



Note  
The SAT button does not operate with this TV.

TV/Teletext operation

Symbol	Name	Refer to page
⓪	Mute on/off button	14
⓪	Standby button	13
⓪	TV power on/TV mode selector button	13
⓪	Teletext button	14
⓪	Input mode selector	14
⓪	Output mode selector	23
1,2,3,4,5,6,7,8,9,and 0	Number buttons	13
Ⓜ	Double-digit entering button	13
C	Direct channel entering button	10
Ⓜ	Volume control button	13
PROGR Ⓜ	Programme selectors	13
⓪	Teletext page access buttons	19
⓪	Picture adjustment button	15
Ⓜ	Sound adjustment button	15
⓪	On-screen display button	14
⓪	Teletext hold button	19
⓪	Time display button	14
⓪	Fastext buttons	19

PIP (Picture-in-picture) operation

Symbol	Name	Refer to page
⓪	PIP on/off button	17
Ⓜ	PIP source selector	17
⓪	Swap button	17
⓪	PIP position changing button	17

Menu operation

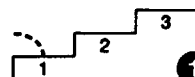
Symbol	Name	Refer to page
MENU	Menu on/off button	7
Ⓜ	Select buttons	7
OK	OK(confirming)button	7
Ⓜ	Back button	7

Video operation

Symbol	Name	Refer to page
VTR1/2/3, MDP	Video equipment selector	24
Ⓜ	Video equipment operation buttons	24
PROGR Ⓜ		

# Getting Started

## Step 1 Preparation



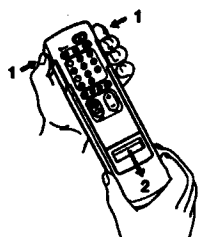
### 1 Check the supplied accessories

When you've taken everything out of the carton, check that you have these items:

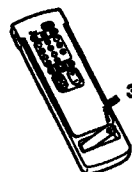
- RM-831 Remote Commander
- One IEC designation R6 battery



### 2 Insert the battery into the Remote Commander



Remove the cover.



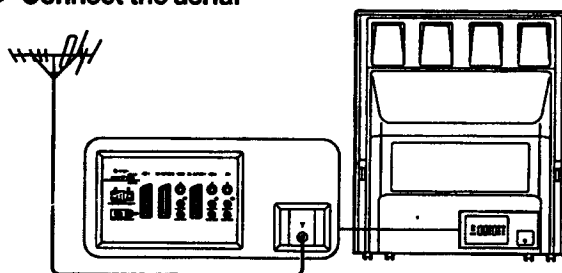
Check the correct polarities.



Refit the outside cover making sure that the Full-Function side is visible to use the menu in step 2.

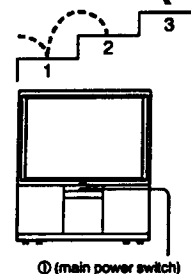
Note: Always remember to dispose of used batteries in an environmental friendly way.

### 3 Connect the aerial



Fit an IEC aerial connector attached to 75-ohm coaxial cable (not supplied) to the 'I' socket at the rear of the TV.

## Step 2 Adjusting Colour Registration (CONVERGENCE)

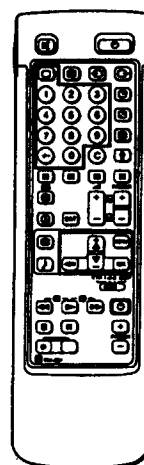


① (main power switch)

Once you have set up the TV, you can choose the language of the menu. Then you should converge the three colour layers (red, green, and blue).

### Before you begin

- Check that the Full-Function side of the Remote Commander is visible.
- Locate Menu operation buttons on the Remote Commander. They are shaded in the illustration at the left.



### 1 Choose a language

- 1 Depress ① (main power switch) on the TV unit. The TV will switch on. If the standby indicator on the TV is lit, press ② or a number button on the Remote Commander.
- 2 Press MENU.
- 3 The LANGUAGE menu appears. (See Fig. 1).
- 4 Select the language you want with  $\Delta$  + or  $\nabla$  - and press OK.
- 5 Press  $\leftarrow$  to return to the main menu.



Fig. 1

### 2 Display the menu

Press MENU.

The main menu appears. (See Fig. 2)

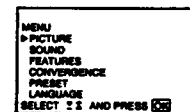


Fig. 2

### 3 Converge the red, green and blue lines

- 1 Select "CONVERGENCE" with  $\Delta$  + or  $\nabla$  - and press OK. The CONVERGENCE menu appears. (See Fig. 3.)
- 2 Select "the line" you want to adjust with  $\Delta$  + or  $\nabla$  -.
- 3 Press OK.
- 4 Press  $\Delta$  + or  $\nabla$  - to converge the selected line with the centre green line and press OK.

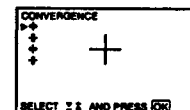


Fig. 3

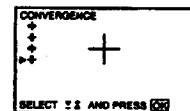


Fig. 4

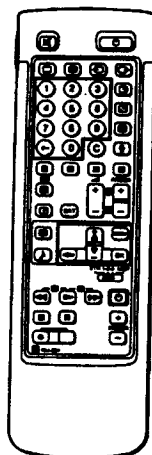
To move up (horizontal line)	Press $\Delta$ +
To move right (vertical line)	
To move down (horizontal line)	Press $\nabla$ -
To move left (vertical line)	

- 5 Repeat steps 2 to 4 to adjust the other lines, until all the lines have overlapped to form a white cross. (See Fig. 4.)
- 6 Press MENU to return to TV picture.





## Step 3 Tuning in to TV Stations



To go back to the main menu  
Keep pressing  $\leftarrow$ .

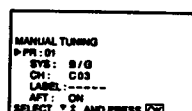
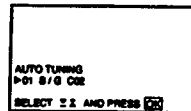
To stop automatic channel presetting  
Press  $\leftarrow$  on the Remote Commander.

### Notes

- After presetting the channels automatically, you can check which channels are stored on which programme positions.

- You can exchange the programme positions to have them appear on screen in the order you like. For details, see "Exchanging the Programme Positions" on page 10.

You can preset the channels (up to 100 channels) by choosing either the automatic or manual method.  
The automatic method is easier if you want to preset all receivable channels at once. Use the manual method if you only have a few channels and want to preset channels one by one.



### Preset Channels Automatically

- Press MENU to display the main menu.
- Select "PRESET" with  $\Delta$  or  $\nabla$  and press OK. The PRESET menu appears. (See Fig. 5.)
- Select "AUTO TUNING" with  $\Delta$  or  $\nabla$  and press OK. The AUTO TUNING menu appears. (See Fig. 6.)
- Select the programme with  $\leftarrow$  and enter the digit numbers from which you want to start presetting.
- Press OK. Select if necessary the TV broadcast system with  $\Delta$  or  $\nabla$  and press OK. (B/G for western European countries, D/K for eastern European countries, L for France and I for the United Kingdom.)
- Using  $\Delta$  or  $\nabla$ , select C (to start presetting regular channels) or S (to start presetting cable channels) and press OK. The automatic channel presetting starts. When presetting is finished, the preset menu reappears. All available channels are now stored on successive number buttons. If you want to change to another broadcasting system, repeat steps 3 to 5.
- Press MENU to return to TV picture.

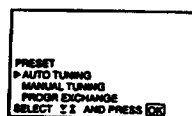


Fig. 5

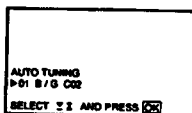


Fig. 6

Use this method if there are only a few channels in your area to preset or if you want to preset channels one by one.

If you have made a mistake  
Press  $\leftarrow$  to go back to the previous position.

To return to the main menu  
Keep pressing  $\leftarrow$ .

### Preset Channels Manually

- Press MENU to display the main menu.
- Select "PRESET" with  $\Delta$  or  $\nabla$  and press OK. (See Fig. 7.)
- Select "MANUAL TUNING" with  $\Delta$  or  $\nabla$  and press OK. The MANUAL TUNING menu appears. (See Fig. 8.)
- Using  $\Delta$  or  $\nabla$ , select the programme position to which you want to preset a channel, and press OK. You can also select the programme position with the number buttons (e.g. for programme 24, press  $\leftarrow$ , 2 and 4).
- Select, if necessary, the TV broadcast system (B/G for western European countries, D/K for eastern European countries, L for France and I for the United Kingdom) with  $\Delta$  or  $\nabla$ . Then press OK.
- Using  $\Delta$  or  $\nabla$ , select C (to start presetting regular channels) or S (to start presetting cable channels) and press OK.
- Press  $\Delta$  or  $\nabla$  until the channel you want appears on the screen. You can also select the channel directly using the number buttons. Press C (once for VHF/UHF channels, twice for cable TV channels), then the number buttons (e.g., for channel 5, press 0 and 5). Then press OK.

#### To preset other channels

Repeat steps 4 to 7.

#### To return to TV picture

Press MENU.

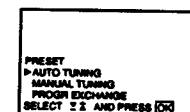


Fig. 7

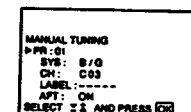
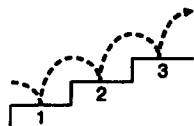


Fig. 8

## Additional Presetting Functions



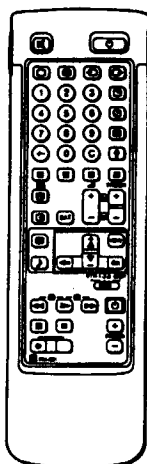
This section shows you additional presetting functions such as exchanging or skipping programme positions, captioning a station name, and manual fine-tuning.

You can skip this section, if not needed.

### Before you begin

- Check that the Full Function side of the Remote Commander is visible.
- Locate the Menu operation buttons.

### PROGRAMME EXCHANGE



## Exchanging Programme Positions

With this function, you can exchange the programme positions to a preferable order.

- 1 Press MENU to display the main menu.
- 2 Select "PRESET" with  $\Delta$  or  $\nabla$  and press OK. The PRESET menu appears.
- 3 Select "PROGRAMME EXCHANGE" with  $\Delta$  or  $\nabla$  and press OK. The PROGRAMME EXCHANGE menu appears. (See Fig. 9.)
- 4 Using  $\Delta$  or  $\nabla$ , select the programme position you want to exchange with another and press OK.
- 5 Using  $\Delta$  or  $\nabla$ , select the programme position to be exchanged and press OK. Now the two programme positions have been exchanged.
- 6 Repeat steps 4 and 5 to exchange other programme positions.
- 7 Press MENU to return to TV picture.

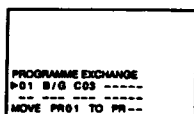


Fig. 9

## Tuning in to a Channel Temporarily

You can tune in to a channel temporarily, even when it has not been preset. Use the buttons on the Full-Function side of the Remote Commander.

- 1 Press C on the Remote Commander for regular channels, or twice to get cable channels. The indication "C" ("S" for cable channels) appears on the screen. (See Fig. 10.)
- 2 Enter the double-digit channel number using the number buttons (e.g. for channel 4, first press 0, then 4). The channel appears. However, the channel will not be stored.



Fig. 10

If you have made a mistake  
Press  $\leftarrow$  to go back to the previous position.  
To go back to main menu  
Keep pressing  $\leftarrow$ .

### MANUAL TUNING

## Skipping Programme Positions

You can skip unused programme positions when selecting programmes with the PROGR  $\pm$  buttons. However, the skipped programmes may still be called up when you use the number buttons.

- 1 Press MENU to display the main menu.
- 2 Select "PRESET" with  $\Delta$  or  $\nabla$  and press OK. The PRESET menu appears.
- 3 Select "MANUAL TUNING" with  $\Delta$  or  $\nabla$  and press OK. The MANUAL TUNING menu appears. (See Fig. 11.)
- 4 Using  $\Delta$  or  $\nabla$ , select the programme position which you want to skip and press OK.
- 5 Press  $\Delta$  or  $\nabla$  until "..." appears in the SYS position. (See Fig. 12.)
- 6 Press OK.
- 7 Repeat steps 4 to 6 to skip other programme positions.
- 8 Press MENU to return to TV picture.

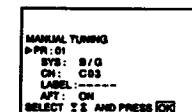


Fig. 11

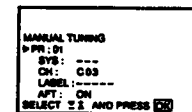


Fig. 12

If you have made a mistake  
Press  $\leftarrow$  to go back to the previous position.  
To go back to main menu  
Keep pressing  $\leftarrow$ .

### MANUAL TUNING

## Captioning a Station Name

You can "name" a channel using up to five characters (letters or numbers) to be displayed on the TV screen (e.g. BBC1). Using this function, you can easily identify which channel you are watching.

- 1 Press MENU to display the main menu.
- 2 Select "PRESET" with  $\Delta$  or  $\nabla$  and press OK. The PRESET menu appears.
- 3 Select "MANUAL TUNING" with  $\Delta$  or  $\nabla$  and press OK. The MANUAL TUNING menu appears.
- 4 Select "PR" with  $\Delta$  or  $\nabla$  and press OK.
- 5 Select programme position you want to caption with  $\Delta$  or  $\nabla$  and press OK.
- 6 Select "LABEL" with  $\Delta$  or  $\nabla$  and press OK.
- 7 Select a letter or number with  $\Delta$  or  $\nabla$  and press OK. Select other characters in the same way. If you want to leave an element blank, select - and press OK. (See Fig. 13.)
- 8 Repeat steps 4 to 7 to caption names for other channels.
- 9 Press MENU to return to TV picture.

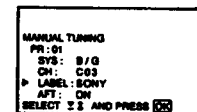


Fig. 13

GB

## MANUAL TUNING

### Manual Fine-Tuning

Normally, the AFT (automatic fine-tuning) is already operating. However, if the picture is distorted, you can use the manual fine tuning function to obtain better picture reception.

To reactivate AFT (automatic fine tuning) Repeat from the beginning and select "ON" in step 7.

- 1 Press MENU to display the main menu.
- 2 Select "PRESET" with  $\Delta$  or  $\nabla$  and press OK. The PRESET menu appears.
- 3 Select "MANUAL TUNING" with  $\Delta$  or  $\nabla$  and press OK. The MANUAL TUNING menu appears.
- 4 Select "PR" with  $\Delta$  or  $\nabla$  and press OK.
- 5 Select programme position you want to manually fine-tune with  $\Delta$  or  $\nabla$  and press OK.
- 6 Select "AFT" with  $\Delta$  or  $\nabla$  and press OK.
- 7 Select "OFF" with  $\Delta$  or  $\nabla$  and press OK. (See Fig. 14.)
- 8 Fine-tune the channel with  $\Delta$  or  $\nabla$  so that you get the best TV reception. As you press the cursor buttons, the frequency changes from - 128 to + 127.
- 9 After fine tuning, press OK. Now the fine-tuned level is stored.
- 10 Repeat steps 4 to 9 to fine-tune other channels.
- 11 Press MENU to return to TV picture.

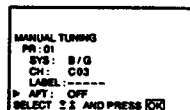
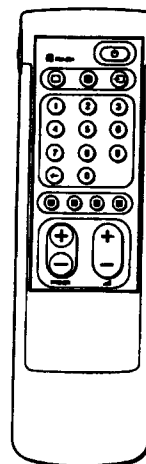


Fig. 14

# Operating Instructions

GB

## Watching the TV



If no picture appears when you depress  $\odot$  on the TV and if the standby indicator on the TV is lit, the TV is in standby mode. Press  $\odot$  or one of the number buttons to switch it on.

This section explains the basic functions you use while watching TV. Most of the operations can be done using the simple side of the Remote Commander.

### Switching the TV on and off

#### Switching on

Depress  $\odot$  (main power switch) on the TV unit.

#### Switching off temporarily

Press  $\odot$  on the Remote Commander.

The TV enters standby mode and the standby indicator on the front of the TV lights up.

To switch on again

Press  $\odot$ , PROGR  $\leftarrow$  or one of the number buttons on the Remote Commander.

#### Switching off completely

Depress  $\odot$  (main power switch) on the TV unit.

### Selecting TV Programmes

Press PROGR  $\leftarrow$  or press the number buttons.

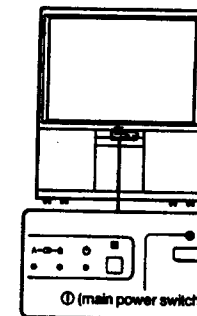
#### To select a double-digit number

Press  $\leftarrow$ , then the numbers.

For example, if you want to choose 23, press  $\leftarrow$ , 2, and 3.

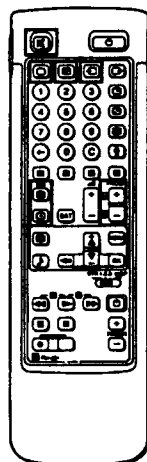
### Adjusting the Volume

Press  $\Delta$   $\leftarrow$ .



For details of the teletext operation, refer to page 19.

For details of the video input picture, refer to page 23.



## Operating the TV Using the Buttons on the TV

With the  $\rightarrow$  buttons on the TV, you can select programmes, adjust the volume, and select video input sources.

### To switch on the TV from the standby mode

Press the  $\rightarrow$  buttons.

### To reset picture and sound controls to the factory preset level (RESET function)

Press the  $\rightarrow$  buttons simultaneously.

### To select TV programmes

Press  $\rightarrow$  repeatedly until the programme number appears, then press the  $\rightarrow$  button to select.

### To adjust the volume

Press  $\rightarrow$  repeatedly until the  $\Delta$  appears, then press the  $\rightarrow$  button to adjust. (See Fig. 15.)

### To select video input sources

Press  $\rightarrow$  repeatedly until the  $\square$  (video input indication) appears, then press the  $\rightarrow$  button to select. Each pressing the button, the indication changes as follows.

AV1  $\rightarrow$  RGB  $\rightarrow$  AV2  $\rightarrow$  YC2  
 $\uparrow$   $\downarrow$   
 YC4  $\rightarrow$  AV4  $\rightarrow$  YC3  $\rightarrow$  AV3

After the video input source is selected, the  $\Delta$  appears. Press the  $\rightarrow$  button to adjust the volume. (See Fig. 16.)

## Watching Teletext or Video Input

### Watching teletext

- 1 Press  $\square$  to view the teletext.
- 2 For teletext operation, enter a 3-digit page number with the number buttons to select a page.  
For fasttext operation, press one of the coloured buttons.  
For both operations, press  $\square$  (PAGE  $\rightarrow$ ) for the next page or  $\square$  (PAGE  $\leftarrow$ ) for the preceding page.
- 3 To go back to the normal TV picture, press  $\square$ .

### Watching a video input picture

- 1 Press  $\square$  repeatedly until the desired video input appears.
- 2 To go back to the normal TV picture, press  $\square$ .

## More Convenient Functions

Use the Full-Function side of the Remote Commander.

### Displaying the on screen indications

- Press  $\square$  once to display all the indications.
- Press  $\square$  again to make the indications disappear.

### Muting the sound

Press  $\square$ .  
To resume normal sound, press  $\square$  again.

### Displaying the time

Press  $\square$ . This function is available only when teletext is broadcast.  
To make the time display disappear, press  $\square$  again.

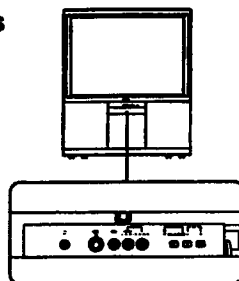
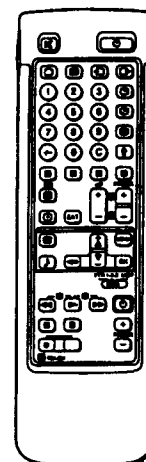


Fig. 15



Fig. 16

## Adjusting and Setting the TV Using the Menu



## Adjusting the Picture and Sound

Although the picture and sound are adjusted at the factory, you can adjust them to suit your own taste. You can also select dual sound (bilingual) programmes when available or adjust the sound for listening with the headphones.

- 1 Press  $\square$  (for picture) or  $\square$  (for sound) on the remote Commander.  
or  
Press MENU and select "PICTURE" or "SOUND," then press OK. The PICTURE ADJUSTMENT or SOUND ADJUSTMENT menu appears. (See Fig. 17 or Fig. 18.)
- 2 Using  $\Delta$  or  $\nabla$ , select the item you want to adjust and press OK. To move up/down:  
From  $\square$  position, press  $\nabla$  to move down.  
From  $\square$  position, press  $\Delta$  to move up.  
 $\square$  means next page.  
 $\square$  means previous page.
- 3 Adjust the setting with  $\Delta$  or  $\nabla$  and press OK. For the effect of each control, see the table below.
- 4 Repeat steps 2 and 3 to adjust other items.
- 5 Press MENU to return to TV picture.

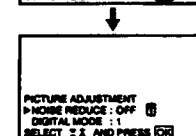


Fig. 17

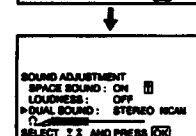
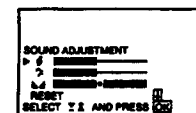


Fig. 18

### Effect of each control

PICTURE ADJUSTMENT	Effect
$\square$ (contrast)	Less $\rightarrow$ More
$\star$ (brightness)	Darker $\rightarrow$ Brighter
$\square$ (colour)	Less $\rightarrow$ More
$\Delta$ (hue)	Greenish $\rightarrow$ Reddish
$\square$ (sharpness)	Softer $\rightarrow$ Sharper
RESET	Resets picture to the factory preset levels.
NOISE REDUCE	OFF: Normal ON: When reducing the picture noise
DIGITAL MODE	1: Line Flicker reduction on. 2: Line Flicker reduction off.
SOUND ADJUSTMENT	Effect
$\Delta$ (Treble)	Less $\rightarrow$ More
$\nabla$ (Bass)	Less $\rightarrow$ More
$\Delta$ (Balance)	More left $\rightarrow$ More right
RESET	Resets sound to the factory preset levels.
SPACE SOUND	OFF: Normal ON: Obtain acoustic sound effect.
LOUDNESS	OFF: Normal ON: When listening to low volume sound.
DUAL SOUND*	A: left channel B: right channel Stereo mono STEREO $\leftrightarrow$ MONO The selected mode of the A-CD-B indicator on the TV lights up.
$\square$ (Headphones)	Less $\rightarrow$ More

\*When receiving a NICAM programme

NICAM stereo/monaural STEREO NICAM  $\rightarrow$  MONO  
 NICAM bilingual NICAM A  $\rightarrow$  NICAM B  $\rightarrow$  MONO

If you have made a mistake  
Press  $\leftarrow$  to go back to the previous position.  
To go back to the main menu  
Keep pressing  $\leftarrow$ .

Note  
Hue is only available for NTSC colour systems.

Note on LINE OUT  
The audio level and the dual sound mode output from the G-jack on the rear correspond to the Headphone VOLUME and DUAL SOUND settings.

When watching a video input picture  
You can select DUAL SOUND to change the sound.

## PIP (Picture In Picture)

GB

### FEATURES

To switch off the timer  
Select "OFF" in step 3.

To check the  
remaining time  
Press G.

### Using the SLEEP TIMER

You can select a time period after which the TV automatically switches into standby mode.

- 1 Press MENU to display the main menu.
- 2 Select "FEATURES" with  $\Delta$  or  $\nabla$  and press OK. The FEATURES menu appears.
- 3 Select "SLEEP TIMER" with  $\Delta$  or  $\nabla$  and press OK. (See Fig. 19.) The time period option changes colour.
- 4 Select the time period with  $\Delta$  or  $\nabla$ . The time period changes as follows:  
OFF  $\rightarrow$  0:30  $\rightarrow$  1:00  $\rightarrow$  1:30  $\rightarrow$  2:00
- 5 After selecting the time period, press OK. The cursor moves back to the left margin and the timer starts counting. One minute before the TV switches into standby mode, a message is displayed on the screen.
- 6 Press MENU to return to TV picture.

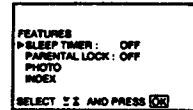
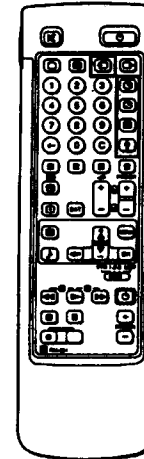


Fig. 19



Note  
RGB input source  
cannot be displayed in  
PIP.

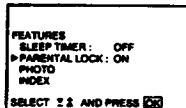


Fig. 20

### PARENTAL LOCK

You can prevent undesirable broadcasts from appearing on the screen. We suggest you use this function to prevent children from watching programmes which you consider unsuitable.

- 1 Select the TV programme which you want to block.
- 2 Press MENU to display the main menu.
- 3 Select "FEATURES" with  $\Delta$  or  $\nabla$  and press OK. The FEATURES menu appears.
- 4 Select "PARENTAL LOCK" with  $\Delta$  or  $\nabla$  and press OK.
- 5 Select "ON" with  $\Delta$  or  $\nabla$  and press OK. (See Fig. 20.)
- 6 Press MENU to return to TV picture.

#### Cancelling PARENTAL LOCK

- 1 On the PARENTAL LOCK menu, select "OFF" with  $\Delta$  or  $\nabla$ .
- 2 Press OK.

### FEATURES

If you try to select a  
programme that has  
been blocked  
The message  
"LOCKED" appears on  
the blank TV screen.

With this function you can display a "PIP screen" (small picture) within the main TV picture. In this way you can watch or monitor the video output from any connected equipment (for example from a VTR) while watching TV or vice versa. For information about connection of other equipment, refer to page 22.



#### Switching PIP on and off

Press  $\square$ .  
The PIP screen will be displayed. The PIP picture will come from the source chosen when the TV was last used.

To Switch PIP off  
Press  $\square$  again.

#### Selecting a PIP source

- 1 Press  $\mathbf{f}$ .  
The symbol  $\mathbf{f}$  will be displayed at the bottom, left-hand corner of the screen.
- 2 Press  $\square$  repeatedly until the desired PIP source is indicated (e.g. TV, AV1, AV2, YC2, AV3, YC3, AV4, YC4).

Note  
If no video source has been connected, the PIP picture will be noisy.

#### Swapping screens

Press  $\square$ .  
The main screen will switch the picture with the PIP screen.

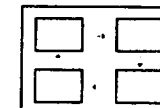


#### Notes

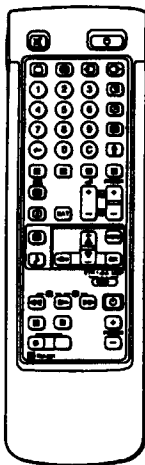
- If a TV programme is on the PIP screen and a video source on the main picture, and you want to change channels, first press  $\mathbf{f}$  and then the programme number buttons or  $\text{PROGR} \leftarrow$ .
- Swapping screens takes about 2 seconds after pressing  $\square$ .
- After swapping screens if the colour systems of the main and PIP pictures are different, the PIP picture first appears in black and white and then in colour.

#### Changing the position of the PIP

Press  $\square$  repeatedly to change the position of the PIP screen within the main screen. There are four different positions available.



## FEATURES



### Displaying Frame-by-frame Pictures (PHOTO)

- 1 Press MENU to display the main menu.
- 2 Select "FEATURES" with Δ+ or ∇- and press OK. The FEATURES menu appears. (See Fig. 21.)
- 3 Select "PHOTO" with Δ+ or ∇- and press OK. (See Fig. 22.) The preset programme is displayed in nine separated screen in sequence. (See Fig. 23.)

*To restore the normal picture*  
Press OK and MENU.

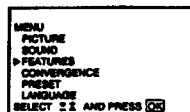


Fig. 21

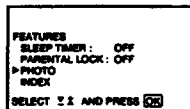


Fig. 22

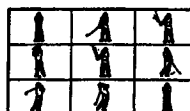


Fig. 23

### Checking All the Preset Programmes (INDEX)

- 1 Press MENU to display the main menu.
- 2 Select "FEATURES" with Δ+ or ∇- and press OK. The FEATURES menu appears. (See Fig. 24.)
- 3 Select "INDEX" with Δ+ or ∇- and press OK. (See Fig. 25.) The nine preset programmes appear in the separated screen in sequence, switching the picture for each seconds. After all the nine programmes are displayed, each sequence switch the picture with the sound for each five seconds. Press Δ+ also switches to the next nine programmes. (See Fig. 26.)

*To restore the normal picture*  
Press OK and MENU.

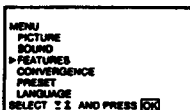


Fig. 24

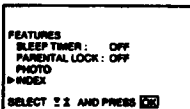


Fig. 25

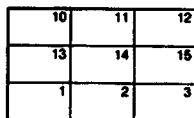
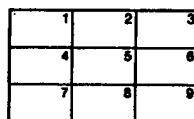
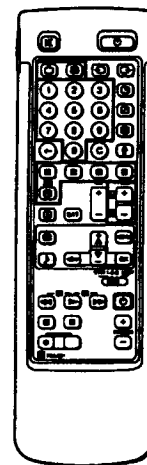


Fig. 26

## Teletext



TV stations broadcast an information service called Teletext via the TV channels. Teletext service allows you to receive various information pages such as weather reports or news at any time you want. For advanced teletext operation, use the buttons on the Full-Function side of the Remote Commander.

### Direct Access Functions

#### Switching Teletext on and off

- 1 Select the TV channel which carries the teletext broadcast you want to watch.
- 2 Press to switch on teletext. A teletext page will be displayed (usually the index page). If there is no teletext broadcast, "No text available" is displayed on the information line at the top of the screen.

To switch teletext off  
Press .

#### Selecting a teletext page

With direct page selection

Use the number buttons to input the three digits of the chosen page number.  
If you have made a mistake, type in any three digits. Then re-enter the correct page number.  
If the requested page is not available at that moment, a message will be displayed.

#### Accessing next or preceding page

Press (PAGE+) or (PAGE-).  
The next or preceding page appears.

#### Superimposing the teletext display on the TV programme

- Press once in teletext mode or twice in TV mode.
- Press again to resume normal teletext reception.

#### Preventing a teletext page from being updated

- Press (HOLD). The HOLD symbol "H" is displayed on the information line.
- Press to resume normal teletext reception.

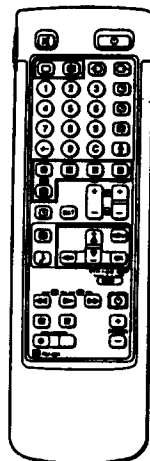
#### Using Fastext

With Fastext you can access pages with one key stroke. When a Fastext page is broadcast, a colour-coded menu will appear at the bottom of the screen. The colours of this menu correspond to the red, green, yellow and blue buttons on the Remote Commander. Press the corresponding coloured button on the Remote Commander which corresponds to the colour-coded menu. The page will be displayed after a few seconds.

Note  
Teletext errors may occur if the broadcasting signals are weak.

With the ample side of the Remote Commander  
You can switch teletext on and off, operate Fastext, and directly select page numbers.

Note  
Fastext operation is only possible, if the TV station broadcasts Fastext signals.



Note  
Some of the features  
may not be available  
depending on the  
teletext service.

## Using the Teletext Menu

This TV is provided with a menu-guided teletext system. When teletext is switched on, you can use the menu buttons to operate the teletext menu. Select the teletext menu functions in the following way:

- 1 Press MENU. The menu will be superimposed on the teletext display. (See Fig. 27.)
- 2 Using  $\Delta$  or  $\nabla$ -, select the teletext function you want and press OK.

### INDEX

The index will give you an overview of the contents of the teletext and the page numbers.

### ENLARGING

For convenient reading of a teletext page, you can enlarge the teletext display with the ability to scroll up and down. After having selected the function, an information line TOP/BOTTOM/FULL will be displayed. (See Fig. 28.)

To enlarge the upper half with "TOP", select "TOP" and hold down the  $\nabla$ -. To enlarge the lower half with "BOTTOM", select "BOTTOM" and hold down the  $\Delta$ +. The picture can be scrolled up to 12 steps in each direction. Press OK for "FULL" to resume the normal size.

Press  $\text{OK}$  to resume normal teletext reception.

### TEXT CLEAR

After selecting the function, you can watch a TV programme while waiting for a teletext page to be displayed. (See Fig. 29.)

Press  $\text{OK}$  to resume normal teletext reception.

### SUBTITLES

Your teletext service will inform you if a TV programme is subtitles.

After having selected the function the subtitles will be displayed.

### REVEAL

Sometimes pages contain concealed information, such as answers to a quiz. The REVEAL option lets you disclose the information. After having selected the function, concealed information will be displayed.

By choosing REVEAL again on the menu, the concealed information will be canceled.

Press  $\text{OK}$  to resume normal teletext reception.

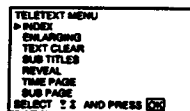


Fig. 27



Fig. 28



Fig. 29

Press OK to select  
"OFF" for the TIME  
PAGE setting to cancel  
the request.

To cancel the request  
Select SUBPAGE and  
press OK.

Note:  
"TIME PAGE" and  
"SUBPAGE" features  
may not be available  
depending on the  
teletext service.

## TIME PAGE

Your teletext service will inform you, if a time coded page is available. You may have a page (e.g. an alarm page) displayed at a certain time.

- 1 Using  $\Delta$  or  $\nabla$ -, select "ON." Press OK.  
The TV programme you were watching before you selected TIME PAGE is restored.  
An information window will be displayed at the bottom of the page.
- 2 To select the desired page, enter three digits for the page number (e.g. 452) using the number buttons and press OK.
- 3 To select the desired time, enter four digits for the desired time (e.g. 1800) using the number buttons and press OK.  
The selected time is displayed at the top in the left-hand corner. At the requested time, the page will be displayed.  
Press  $\text{OK}$  to resume normal teletext mode.

## SUBPAGE

You may want to select a particular teletext page from several subpages which are rotated automatically. After having selected the function, an information line will be displayed.

To select the desired subpage, enter four digits using PROGR +/- or the number buttons (e.g. enter 0002 for the second page of a sequence).

# Connecting and Operating Optional Equipment

## Connecting Optional Equipment

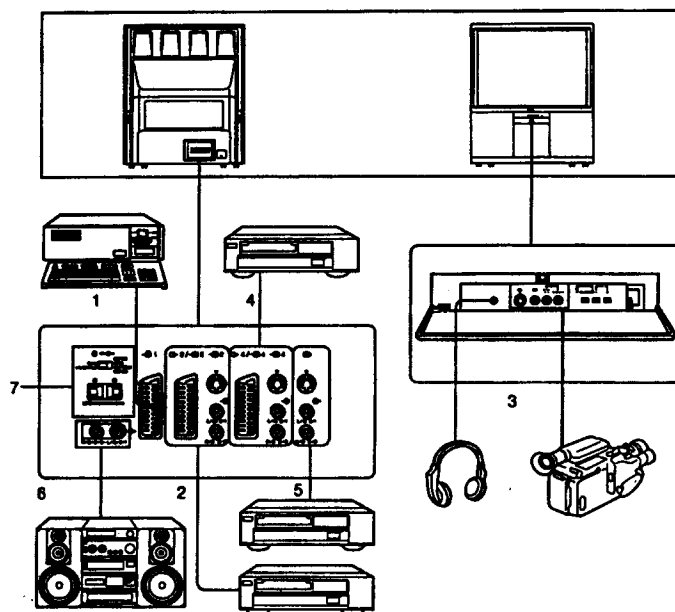
You can connect optional audio-video equipment to this TV such as a VCR, video disc player, and stereo system.

To connect a VCR using the T terminal  
Connect the serial output of the VCR to the serial terminal T of the TV.  
We recommend that you tune in the video signal to programme number "0." For details see "Preset channels manually" on page 9.

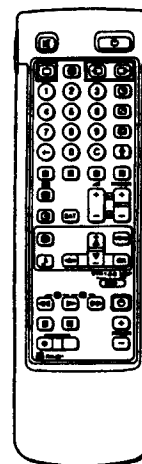
If the picture or the sound is distorted  
Move the VCR away from the TV.

S/video Input (Y/C Input)  
Video signals may be separated into Y (luminance or brightness) and C (chrominance) signals. Separating the Y and C signals prevents them from interfering with one another, and therefore improves picture quality (especially luminance). This TV is equipped with 3 S Video input jacks through which these separated signals can be input directly.

When connecting a monaural VCR  
Connect only the white -C- jack to both the TV and VCR.



Acceptable input signal	Available output signal
1 Normal audio/video and RGB signal	Video/audio from TV tuner
2 Normal audio/video and S video signal	Video/audio from selected source
3 Normal audio/video and S video signal	No outputs
4 Normal audio/video and S video signal	Video/audio displayed on TV screen (monitor out)
5 No inputs	S/video/audio signal displayed on TV screen (monitor out)
6 No inputs	Audio signal (variable)
7 Centre speaker input. Select to CENTRE when TV set's speakers are used for external amplifier (e.g. Dolby amplifier). For normal operation, switch position is MAIN.	No outputs



-C-1 connector always outputs the audio and video signals from the T aerial terminals.

C-4/-C-4 connector always outputs the audio and video signals which you are currently watching on the TV screen (i.e. monitor output).

## Selecting Input

This section explains how to view the video input picture (of the video source connected to your TV).

Press -C- repeatedly to select the input source.

The symbol of the selected input source will appear. (See Fig. 30.)

To go back to the normal TV picture

Press 0.



Fig. 30

Symbol	Input signal
-C-1	Audio/Video input through the -C-1 connector
-C-2	Audio/RGB input through the -C-1 connector
-C-2	Audio/Video input through the C-2/-C-2 connector
-C-2	Audio/S video input through the C-2/-C-2 or -C-2 connector (4-pin connector)
-C-3	Audio/Video input through -C-3 and -C-3 on the front
-C-3	Audio/S video input through the -C-3 (4-pin connector) and -C-3 connectors
-C-4	Audio/Video input through the C-4/-C-4 connector
-C-4	Audio/S video input through the C-4 / -C-4 or -C-4 connector (4-pin connector)

You can also select the input mode using the F and -/+ buttons on the TV. In this case, first select -C-, and then press -/+ buttons to select the input.

## Selecting Output from the C-2/-C-2 Connector

You can select the output signal from the C-2/-C-2 connector. The C-2/-C-2 connector outputs the input signals from the other connectors as indicated below.

Press C- repeatedly to select the output.

The symbol of the selected output source appears. (See Fig. 31.)

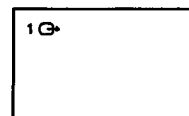
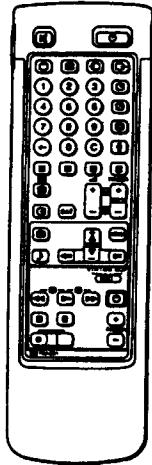



Fig. 31

Symbol	Output signal of the C-2/-C-2 connector
1 C-	Audio/Video signal from the -C-1 connector
2 C-	Audio/Video signal from the C-2/-C-2 connector
2 C+	Audio/S video signal from the C-2/-C-2 or -C-2 connector (4 pin)
3 C-	Audio/Video signal from the -C-3, -C-3 connectors
3 C+	Audio/S video signal from the -C-3, -C-3 connectors
4 C-	Audio/Video signal from the C-4 / -C-4 connector
4 C+	Audio/S video signal from the C-4 / -C-4 or -C-4 connector (4 pin)
TV C-	Audio/Video signal from the T aerial terminal



## For Your Information



When recording  
When you use the  (record) button, make  
sure to press this button  
and the one to the right  
of it simultaneously.

### Remote Control of Other Sony Equipment

You can use the TV Remote Commander to control most of Sony remote-controlled video equipment such as: beta, 8 mm and VHS VCRs and video disc players.

**Tuning the Remote Commander to the equipment**

- 1 Set the VTR 1/2/3 MDP selector according to the equipment you want to control:

VTR 1: Beta VCR

VTR 2: 8 mm VCR

VTR 3: VHS VCR

MDP: Video disc player

- 2 Use the buttons indicated in the illustration to operate the additional equipment.

If your video equipment is furnished with a COMMAND MODE selector, set this selector to the same position as the VTR 1/2/3 MDP selector on the TV Remote Commander.

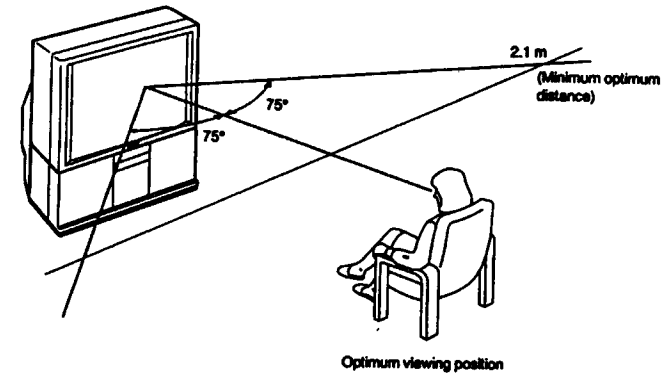
If the equipment does not have a certain function, the corresponding button on the Remote Commander will not operate.

### Optimum Viewing Area

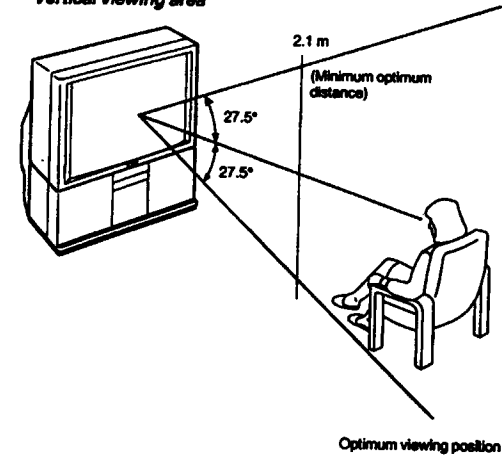
For the best picture quality, try to position the projection TV so that you can view the screen from within the areas shown below.

GB

#### Horizontal viewing area

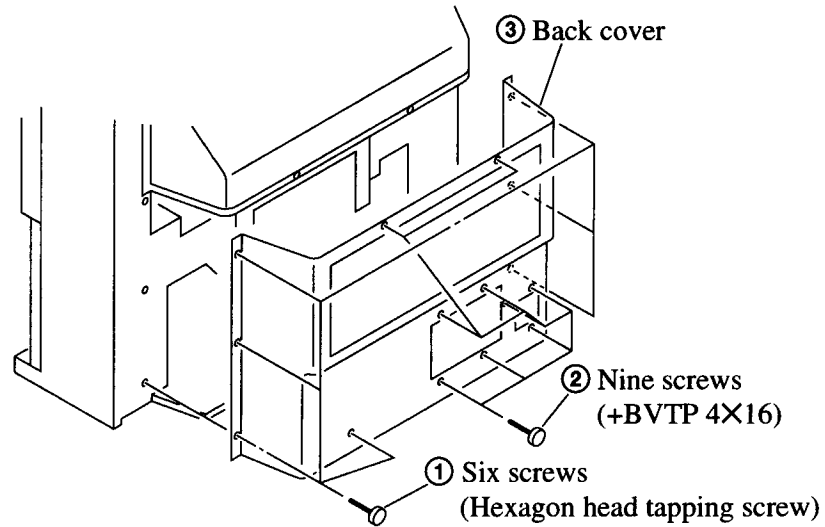


#### Vertical viewing area

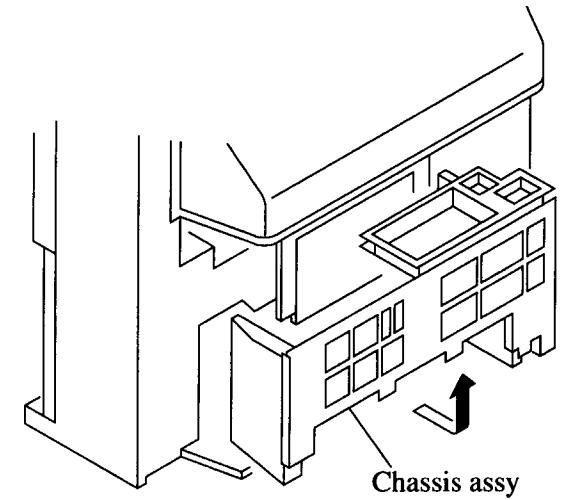


## SECTION 2 DISASSEMBLY

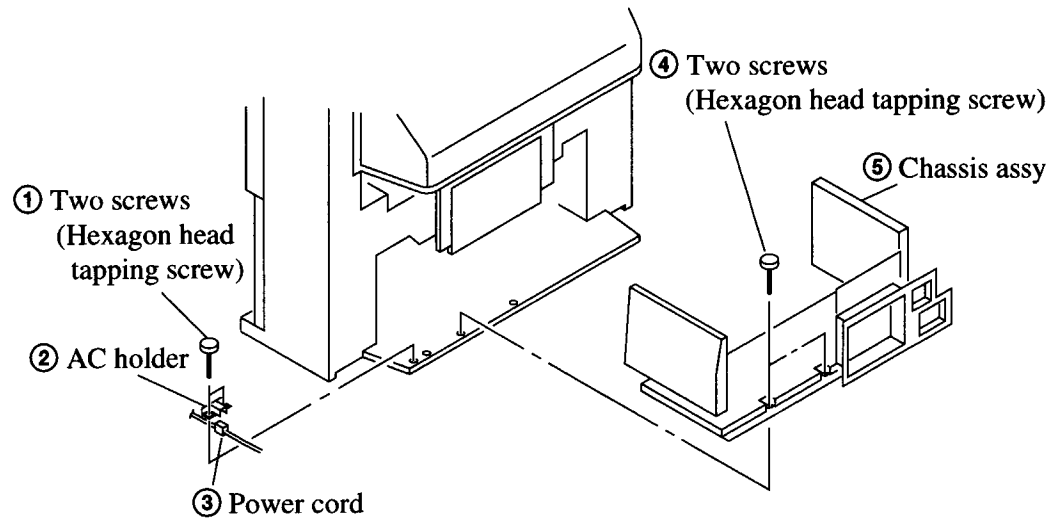
### 2-1-1. BACK COVER REMOVAL



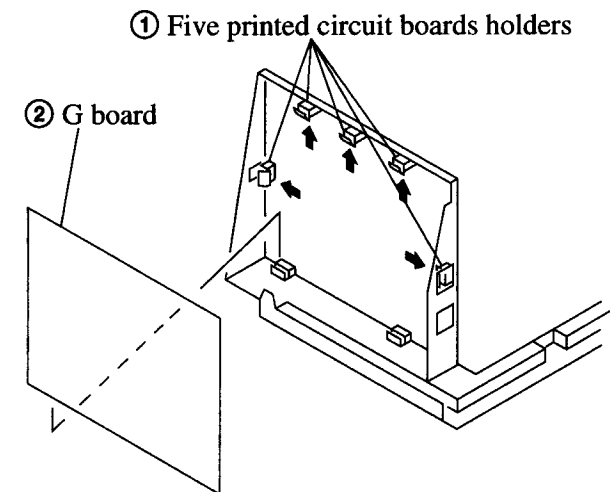
### 2-1-3. SERVICE POSITION



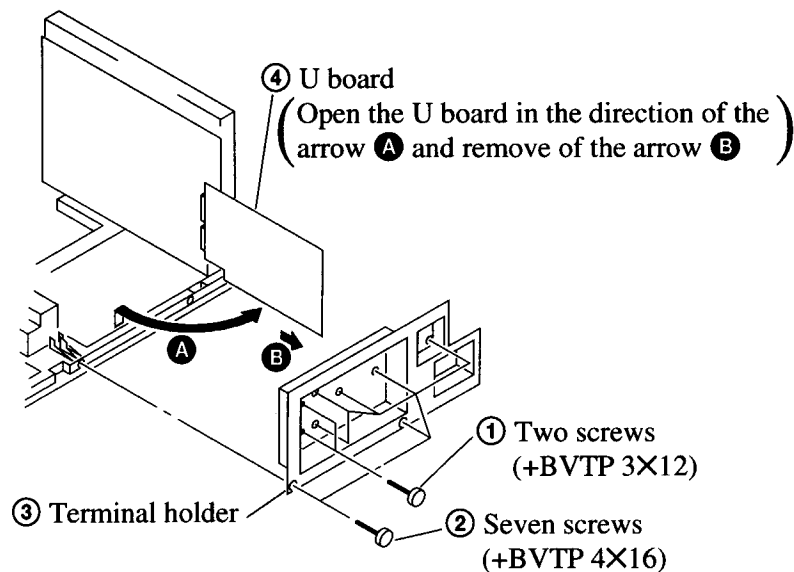
### 2-1-2. CHASSIS ASSY REMOVAL



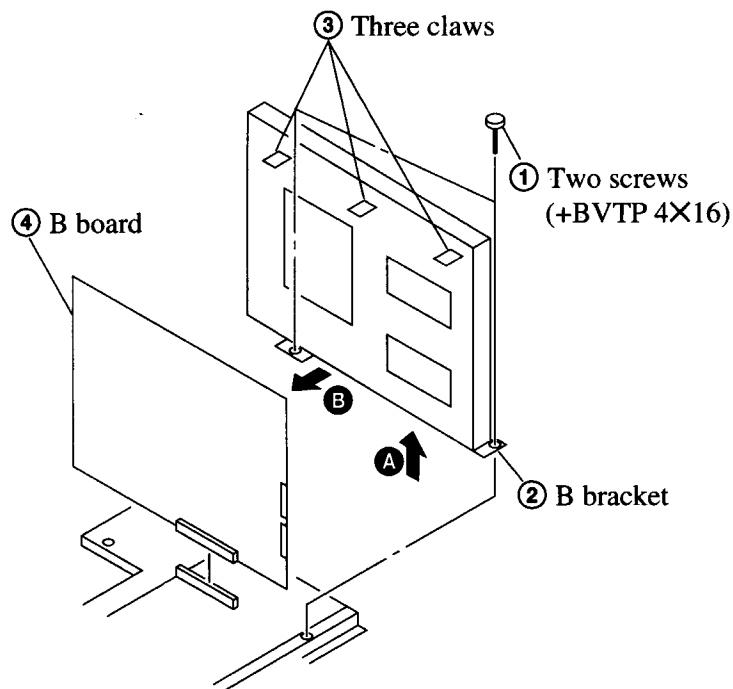
### 2-1-4. G BOARD REMOVAL



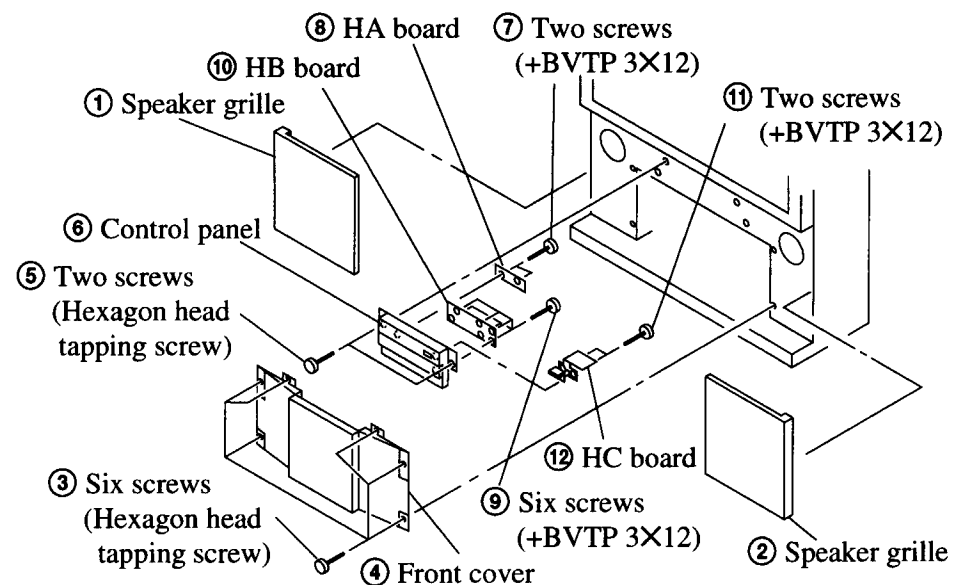
### 2-1-5. U BOARD REMOVAL



### 2-1-6. B BOARD REMOVAL

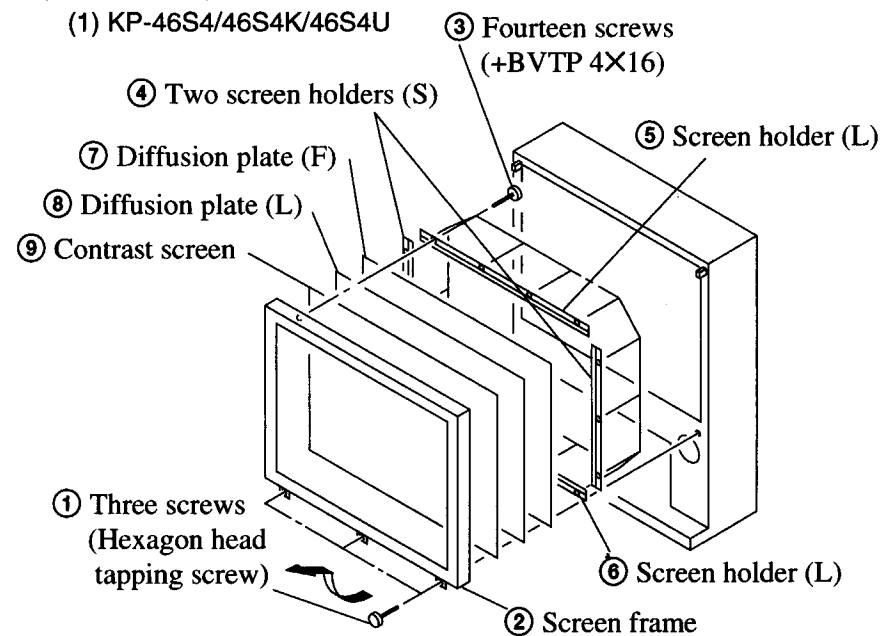


### 2-1-7. HA AND HB BOARDS REMOVAL

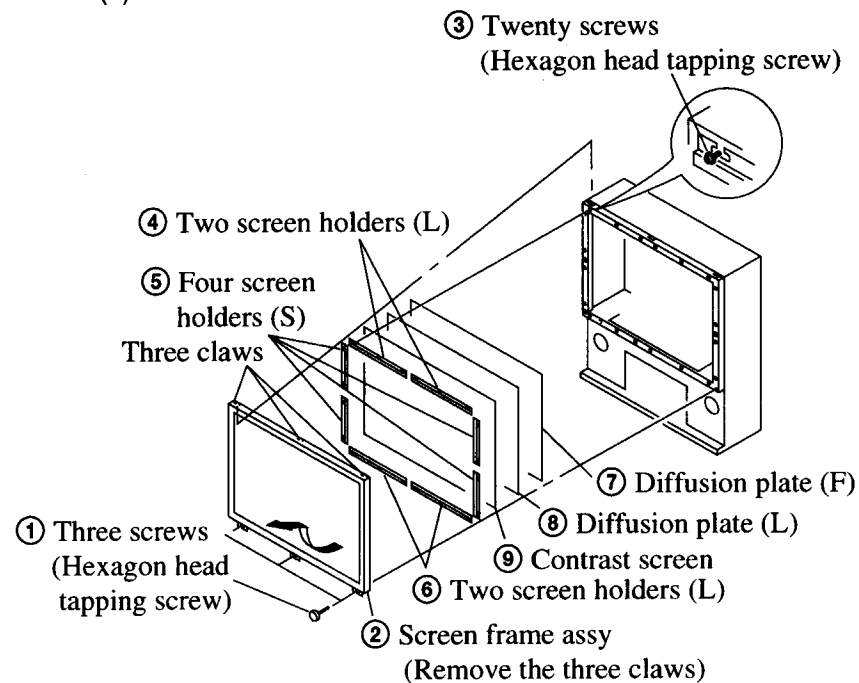


### 2-1-8. BEZNET ASSY REMOVAL

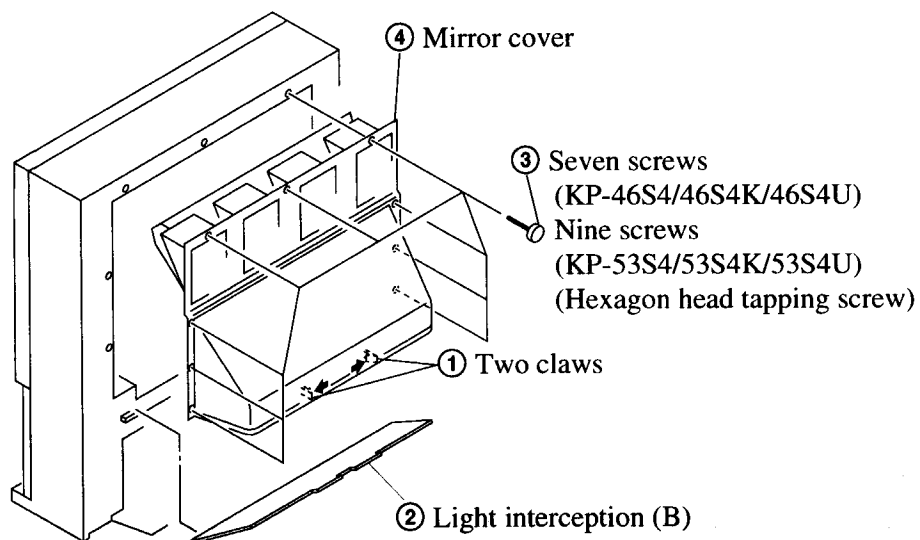
(1) KP-46S4/46S4K/46S4U



## (2) KP-53S4/53S4K/53S4U

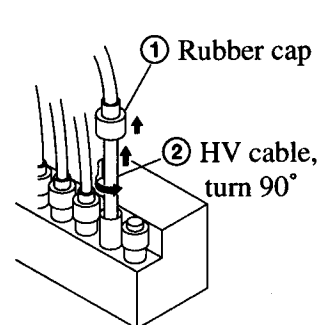


## 2-1-9. MIRROR COVER ASSY REMOVAL

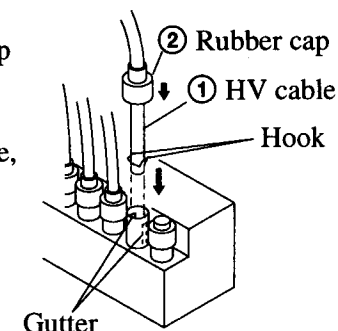


## 2-1-10. HIGH-VOLTAGE CABLE INSTALLATION AND REMOVAL

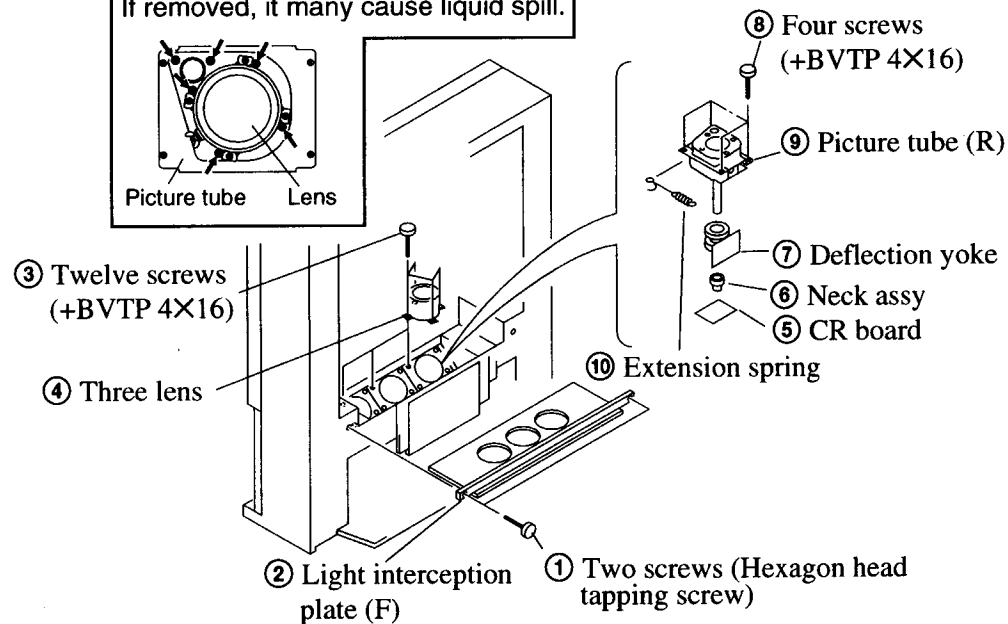
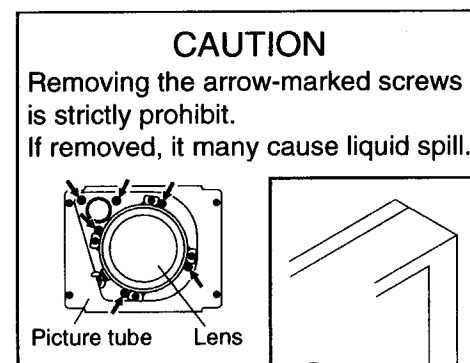
### (1) Remover



### (2) Installation

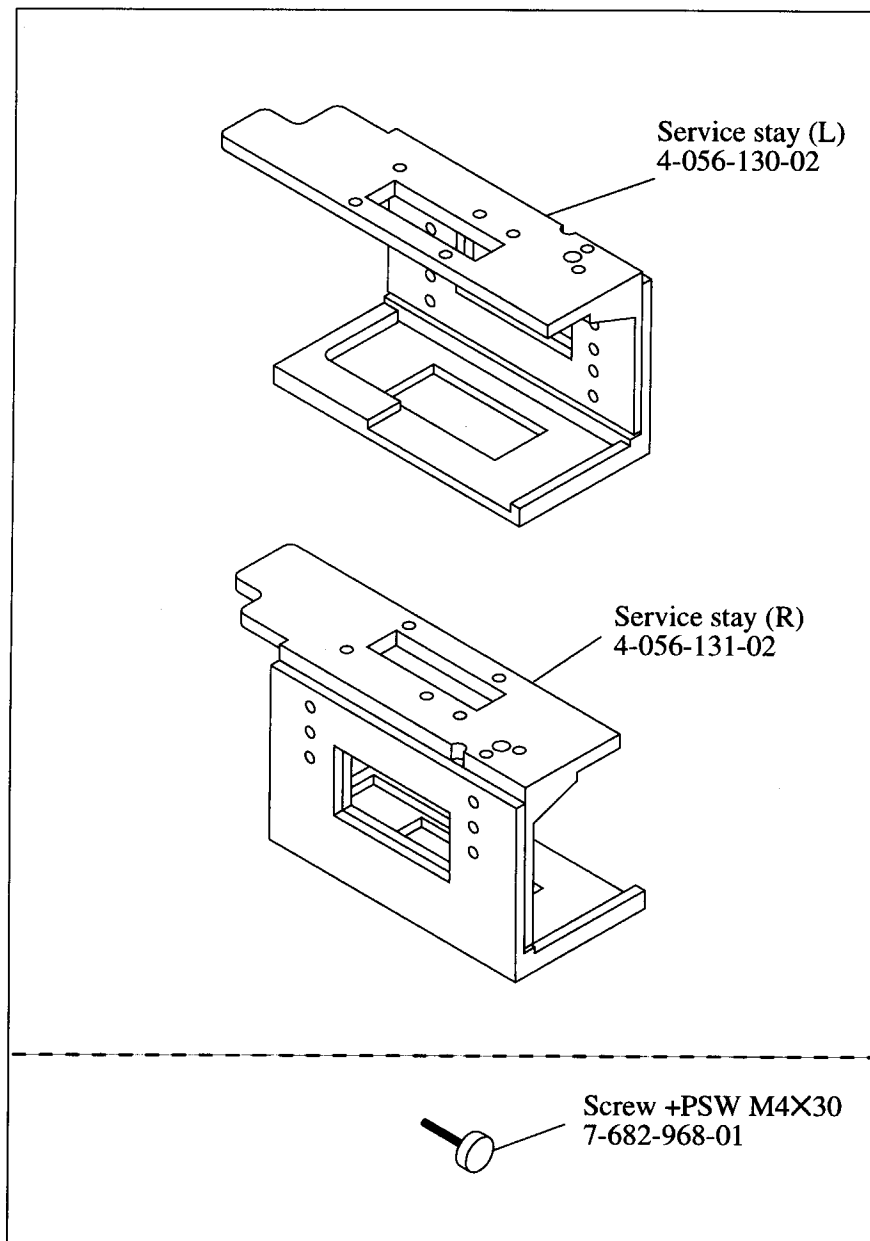


## 2-1-11. PICTURE TUBE REMOVAL

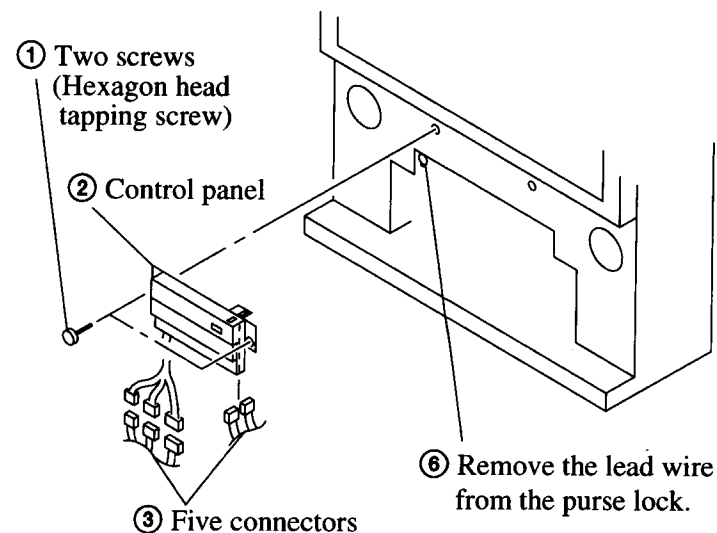


## 2-2.SERVICE STAY ASSY HOW TO USE AND CARRY BACK SERVICE STAY ASSY

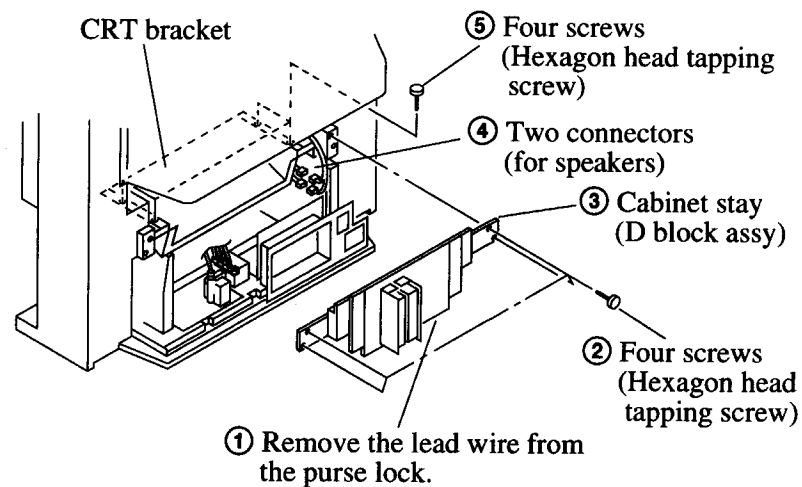
### 2-2-1. SERVICE STAY ASSY (X-4034-033-2)



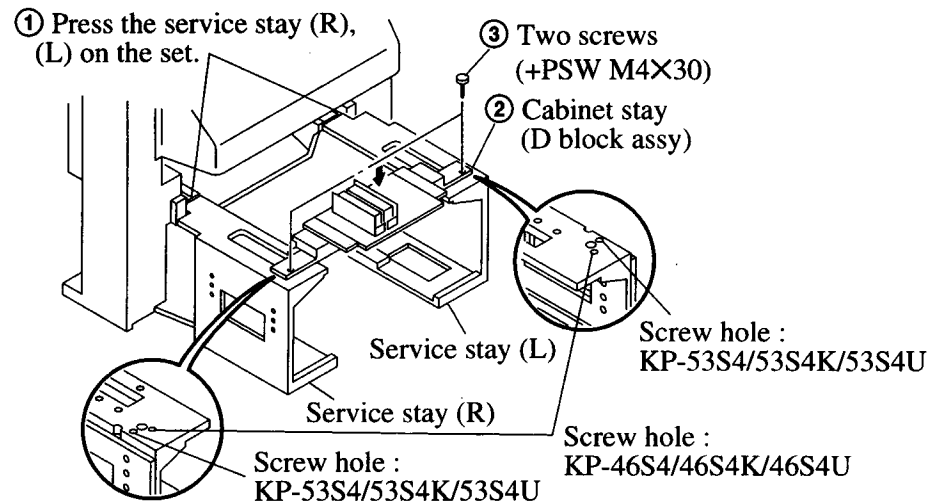
### 2-2-2.CONTROL PANEL REMOVAL



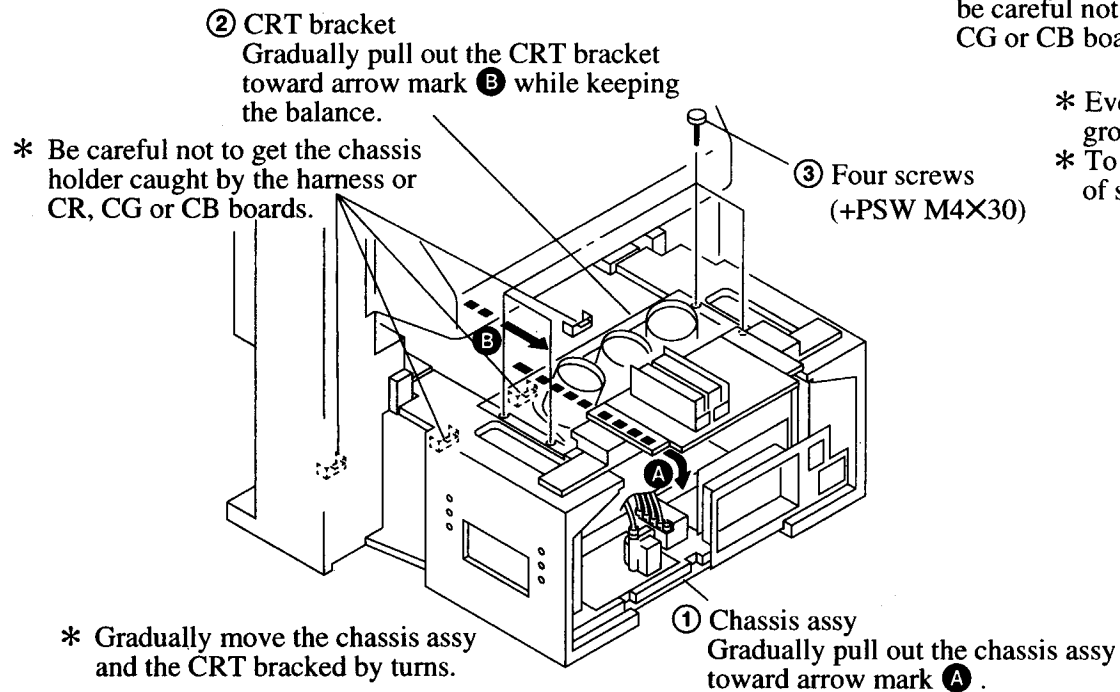
### 2-2-3. CABINET REMOVAL



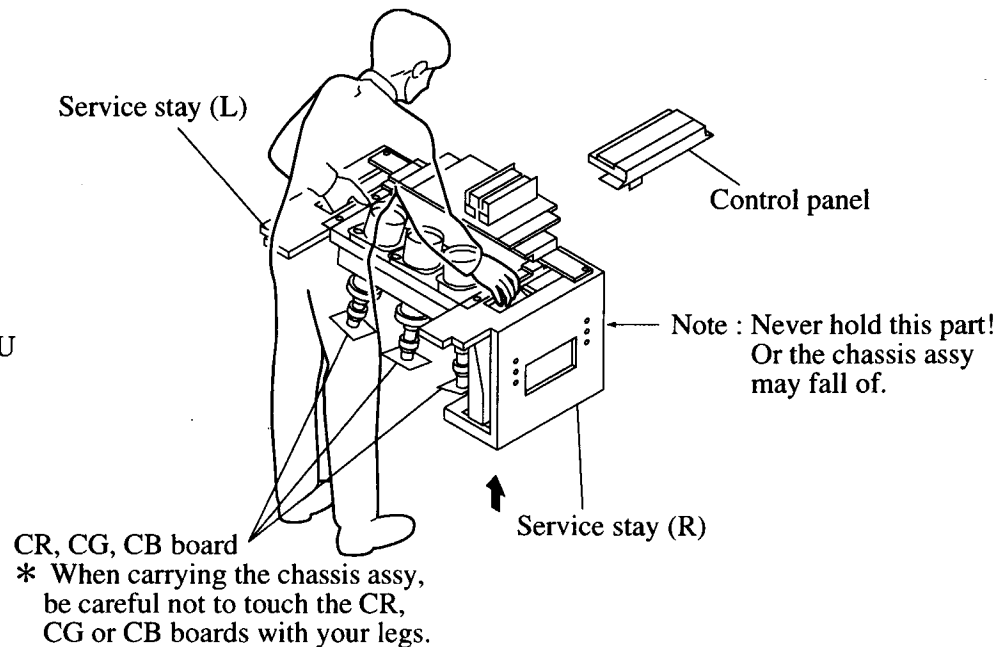
#### 2-2-4. SETTING OF STAY ASSY



#### 2-2-5. INSTALL A CHASSIS ASSY

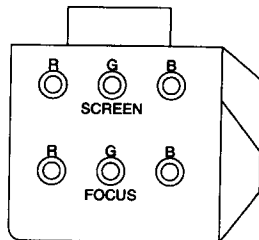
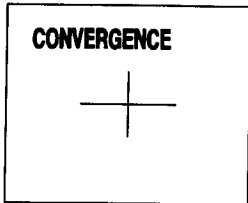
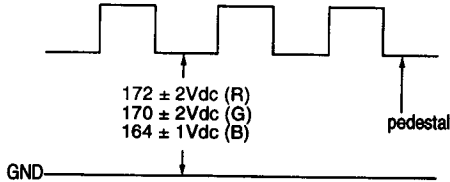


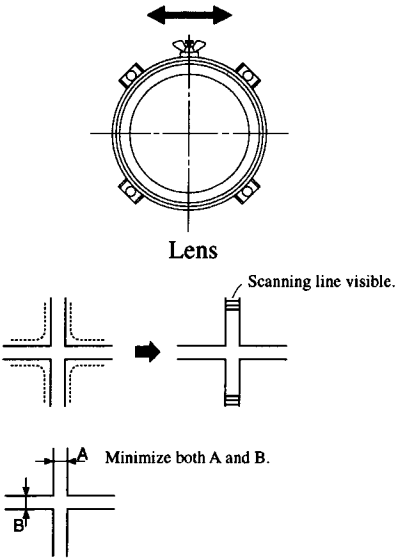
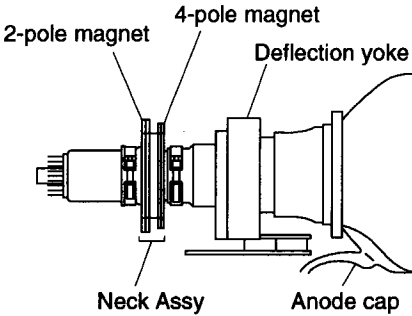
#### 2-2-6. CARRY BACK SERVICE STAY ASSY



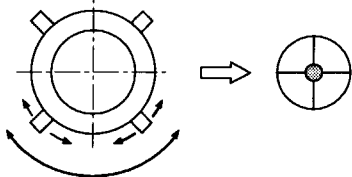
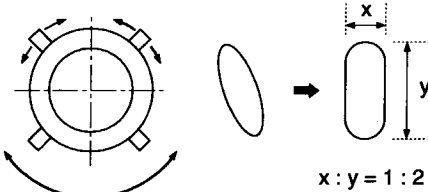
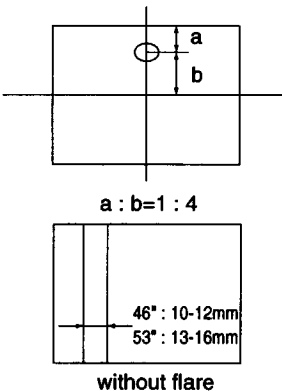
- \* Even with 2 servicemen, be sure to put your hands into the grooves on the top of service stays (L) and (R) to carry the chassis assy.
- \* To hold the chassis assy, put your hands into the grooves on the top of service stays (L) and (R).

## SECTION 3 SET-UP ADJUSTMENTS

ADJUSTMENT ITEM AND PROCEDURE	EQUIPMENT AND SIGNAL	MEASUREMENT POSITION	ADJUSTMENT LOCATION	ILLUSTRATION AND SHAPE AND NUMBER
<p><b>SCREEN VOLTAGE ADJUSTMENT (ROUGH ALIGNMENT)</b></p> <ol style="list-style-type: none"> <li>1. Turn the red VR on the FOCUS block all the way to the left and then gradually turn it to the right until the point where you can see the retrace line.</li> <li>2. Next gradually turn it to the left to the position where the retrace line disappears.</li> </ol> <p><b>FOCUS LENS ADJUSTMENT</b></p> <ol style="list-style-type: none"> <li>1. Loosen the lens screw.</li> <li>2. Set in service mode.</li> <li>3. Use VSP on the service mode menu to show only the green colour.</li> <li>4. Press the Commander Menu button and select FEATURES and CONVERGENCE to display the test signal on the screen.</li> <li>5. Rotate the green lens and align with the optimal focus point from the test signal.</li> <li>6. Use RRH from the service mode menu to set to green and red.</li> <li>7. Disply the test signal and rotate the red lens to obtain the optimum focus at the point where the red and green spots overlap.</li> <li>8. Use RBH from the service mode menu to set to red and blue.</li> <li>9. Disply the test signal and rotate the blue lens to obtain the optimum focus at the point where the blue and red spots overlap.</li> <li>10. Tighten the lens screw.</li> </ol> <p><b>SCREEN (G2) ADJUSTMENT</b></p> <ol style="list-style-type: none"> <li>1. Select VIDEO mode without signals.</li> <li>2. Connect an oscilloscope to the TP7103(KR), TP7203(KG) and TP7303(KB) of CR board, CG board and CB board.</li> <li>3. Adjust R to <math>172 \pm 2\text{Vdc}</math> G to <math>170 \pm 2\text{Vdc}</math> B to <math>164 \pm 1\text{Vdc}</math> by rotating screen VR on the focus block.</li> </ol>	<p>Monoscope Pattern</p>		<p>PICTURE ..... minimum BRIGHTNESS ..... 50% SCREEN (G2)</p>	 <p style="text-align: center;">FOCUS block</p>  <p style="text-align: center;">CONVERGENCE</p> 

ADJUSTMENT ITEM AND PROCEDURE	EQUIPMENT AND SIGNAL	MEASUREMENT POSITION	ADJUSTMENT LOCATION	ILLUSTRATION AND SHAPE AND NUMBER
<p><b>FOCUS VR ADJUSTMENT</b></p> <ol style="list-style-type: none"> <li>1. Set in service mode.</li> <li>2. Use VSP on the service mode menu to show only the green colour.</li> <li>3. Press the Commander Menu button (convergence) and output the test signal.</li> <li>4. Rotate the green VR on the FOCUS block and align to obtain the optimal focus point.</li> <li>5. Use RRH from the service mode menu to set to green and red.</li> <li>6. Display the test signal and rotate the red VR to obtain the optimum focus at the point where the red and green spots overlap.</li> <li>7. Use RBH from the service mode menu to set to red and blue.</li> <li>8. Display the test signal and rotate the blue VR aligning to obtain the optimum focus at the point where the blue and green spots overlap.</li> </ol>				 <p>The diagram illustrates the focus adjustment process. At the top, a lens is shown with a horizontal double-headed arrow above it, indicating the scanning line's position. Below the lens, a crosshair pattern is shown with the text 'Scanning line visible.' pointing to the center. Further down, a crosshair pattern is shown with points A and B marked on the horizontal and vertical bars respectively, with the text 'Minimize both A and B.' indicating the adjustment goal.</p>
<p><b>DEFLECTION YOKE TILT ADJUSTMENT</b></p> <ol style="list-style-type: none"> <li>1. Set in service mode.</li> <li>2. Set to receive the monoscope signal.</li> <li>3. Use VSP on the service mode menu to show only the green colour.</li> <li>4. Loosen the deflection yoke set screw and align the tilt of the deflection yoke so that the bars at the centre of the monoscope pattern are horizontal.</li> <li>5. After aligning the deflection yoke, fasten it securely to the funnel-shaped portion (neck) of the CRT.</li> <li>6. The tilt of the deflection yoke for red is aligned with RRH on the service mode menu, and the tilt on the deflection yoke for blue is aligned with RBH on the service menu, is aligned the same as was done for green.</li> </ol>	<p>Monoscope pattern</p>			 <p>The diagram shows the internal components of a CRT. Labels include: '2-pole magnet' pointing to the leftmost magnet assembly, '4-pole magnet' pointing to the middle magnet assembly, 'Deflection yoke' pointing to the coil assembly on the right, 'Neck Assy' pointing to the funnel-shaped portion of the CRT, and 'Anode cap' pointing to the cap at the far right end of the tube.</p>



ADJUSTMENT ITEM AND PROCEDURE	EQUIPMENT AND SIGNAL	MEASUREMENT POSITION	ADJUSTMENT LOCATION	ILLUSTRATION AND SHAPE AND NUMBER
<p><b>2-POLE MAGNET ADJUSTMENT</b></p> <ol style="list-style-type: none"> <li>1. Set in service mode.</li> <li>2. Set to receive the dot pattern signal.</li> <li>3. Place the caps on the red and blue lens so that only the green colour is showing.</li> <li>4. Turn the green VR on the focus block to the right and set to overfocus to enlarge the spot.</li> <li>5. Now align the 2-Pole Magnet so that the enlarged spot is in the center of the Just Focus spot.</li> <li>6. Align the green focus VR and set for just (precise) focus.</li> <li>7. Perform the same alignment for red and blue.</li> </ol>	Dot pattern		2-pole magnet	<p>Use the center dot</p> 
<p><b>4-POLE MAGNET ADJUSTMENT</b></p> <ol style="list-style-type: none"> <li>1. Set in service mode.</li> <li>2. Set to receive the dot pattern signal.</li> <li>3. Place the caps on the red and blue lens so that only the green colour is showing.</li> <li>4. Turn the green VR on the focus block to the left and set to underfocus to enlarge the spot.</li> <li>5. Now align the 4-Pole Magnet so that the enlarged spot becomes a perfect circle.</li> </ol>	Dot pattern		4-pole magnet	<p>Use the center dot</p>  <p><math>x : y = 1 : 2</math></p>
<p><b>DEFOCUS ADJUSTMENT</b></p> <ol style="list-style-type: none"> <li>1. Receive the crosshatch signal.</li> <li>2. Adjust the FOCUS knob so that the crosshatch pattern vertical line width is as in the figure on the right.</li> <li>3. Blue only defocus Adjustment.</li> </ol>	Crosshatch pattern		<p>FOCUS VR</p> <ul style="list-style-type: none"> <li>• RED</li> <li>• GREEN</li> <li>• BLUE</li> </ul>	<p>• Focus adjustment point</p>  <p><math>a : b = 1 : 4</math></p> <p>46° : 10-12mm 53° : 13-16mm</p> <p>without flare</p>

## ELECTRICAL ADJUSTMENT BY REMOTE COMMANDER

By using Remote Commander (RM-831), all circuit adjustments can be made.

### NOTE : Test Equipment Required.

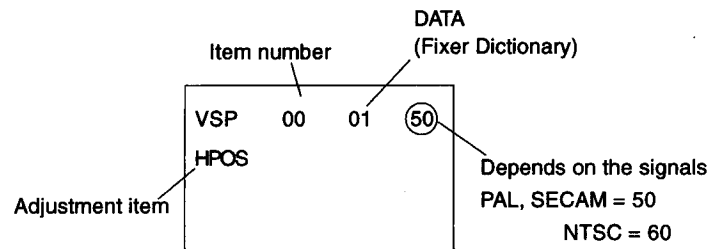
1. Pattern Generator
2. Frequency counter
3. Digital multimeter
4. Audio oscillator

### 1. METHOD OF SETTING THE SERVICE ADJUSTMENT MODE

#### SERVICE MODE PROCEDURE

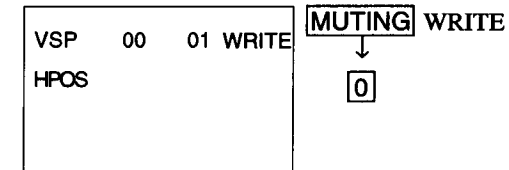
1. Standby mode. (Power off)
2. **DISPLAY** → **5** → **VOL (+)** → **TV POWER** on the Remote Commander.  
( **+** → **5** → **△** → **□** ) (Press each button within a second.)

#### SERVICE MODE ADJUSTMENT



3. The CRT displays the item being adjusted.
4. Press **1** or **4** on the Remote Commander to select the item.
5. Press **3** or **6** on the Remote Commander to change the data.
6. If you want to recover the latest values press **7** then **0** to read the memory.
7. Press **MUTING** then **0** to write into memory.

### SERVICE ADJUSTMENT MODE MEMORY



8. Press **8** then **0** on the Remote Commander to initialize.
9. Turn set off and on to exit.

### 2. AFTER IC401 (NON VOLATILE MEMORY) REPLACEMENT

1. Enter to Service Mode.
2. Press **5** and **0** of the commander to initialize data.
3. Adjust standard data to call each item number with **3** and **6** of the commander.  
Write the data per each item number ( **MUTING** + **0** )
4. Select CP2 items menu and respectively set the data with **3** and **6** of the commander.

	Item number	Adjustment item	AEP	UK	K (OIRT)
CP2	03	B/G	1	1	1
	04	I	1	1	1
	05	IRE	0	1	0
	06	D/K	1	0	1
	07	AUS	0	0	0
	08	L	1	1	1

Press **MUTING** + **0** of the commander to write the data.

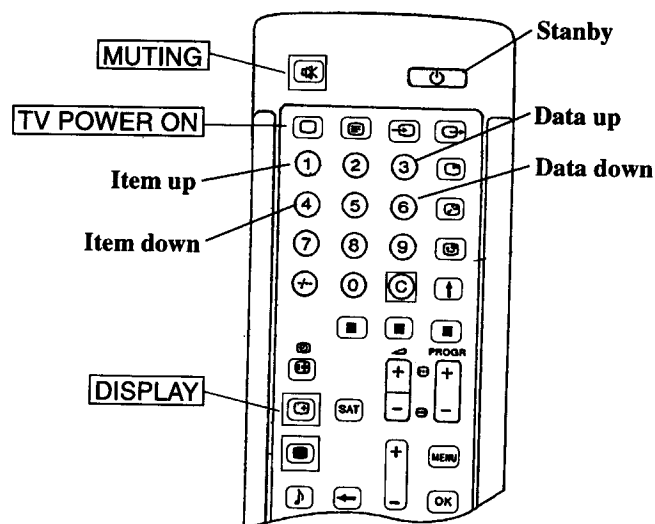
5. Select item CSET of TXT menu and set the data with **3** and **6** of the commander.

TXT	14	CSET	3 : West (AEP/UK), 5 : EAST(K) 6 : GREEK
-----	----	------	---

Press **MUTING** + **0** of the commander to write the data.

6. Press **8** and **0** of the commander to make the user control data standard.

### 3. ADJUST BUTTONS AND INDICATOR



RM-831

### 4. SERVICE MODE LIST

#### VSP

	Item number	Adjustment item	Data range	Initial data	Note	Device
VSP	00	HPOS	0 ~ 63	51	H-SHIFT	CXD2018Q
	01	VSIZ	0 ~ 63	24	V-SIZE	
	02	VPOS	0 ~ 63	24	V-SHIFT	
	03	VSCO	0 ~ 15	8	S-CORRECTION	
	04	VLIN	0 ~ 15	10	V-LINEARITY	
	05	HSIZ	0 ~ 63	19	H-SIZE	
	06	HIPN	0 ~ 63	38	PIN-AMP	
	07	HKEY	0 ~ 31	9	TILT	
	08	UPCP	0 ~ 15	7	UPPER CORNER PIN	
	09	LOCP	0 ~ 15	10	LOWER CORNER PIN	
	10	HBOW	0 ~ 15	7	V-BOW	
	11	HSKE	0 ~ 15	9	V-ANGLE	

#### DP

	Item number	Adjustment item	Data range	Initial data	Note	Device
R GH	00	CENT	-127 ~ +128	20	GREEN. H CENTER	CXP85112B-613S
	01	SKEW	-127 ~ +128	0	GREEN. H SKEW	
	02	BOW	-127 ~ +128	0	GREEN. H BOW	
	03	4BOW	-127 ~ +128	0	GREEN. H 4th BOW	
	04	SIZE	-127 ~ +128	0	GREEN. H SIZE	
	05	LIN	-127 ~ +128	7	GREEN. H LINEARITY	
	06	MSIZ	-127 ~ +128	-5	GREEN. H MIDDLE SIZE	
	07	MLIN	-127 ~ +128	-1	GREEN. H MIDDLE LINEARITY	
	08	KEY	-127 ~ +128	0	GREEN. H KEY	
	09	SSKW	-127 ~ +128	0	GREEN. H SUB SKEW	
	10	MPIN	-127 ~ +128	30	GREEN. H MIDDLE PIN	
	11	PIN	-127 ~ +128	0	GREEN. H PIN	
	12	SBOW	-127 ~ +128	0	GREEN. H SUB BOW	
	13	MBOW	-127 ~ +128	0	GREEN. H MIDDLE BOW	
	14	4PIN	-127 ~ +128	-3	GREEN. H 4th PIN	
	15	4SBOW	-127 ~ +128	0	GREEN. H 4th SUB BOW	
R GV	00	CENT	-127 ~ +128	0	GREEN. V CENTER	CXP85112B-613S
	01	SKEW	-127 ~ +128	0	GREEN. V SKEW	
	02	BOW	-127 ~ +128	2	GREEN. V BOW	
	03	SIZE	-127 ~ +128	0	GREEN. V SIZE	
	04	LIN	-127 ~ +128	4	GREEN. V LINEARITY	
	05	MSIZ	-127 ~ +128	0	GREEN. V MIDDLE SIZE	
	06	MKEY	-127 ~ +128	0	GREEN. V MIDDLE KEY	
	07	KEY	-127 ~ +128	10	GREEN. V KEY	
	08	SSKW	-127 ~ +128	0	GREEN. V SUB SKEW	
	09	MPIN	-127 ~ +128	25	GREEN. V MIDDLE PIN	
	10	PIN	-127 ~ +128	-20	GREEN. V PIN	
	11	SBOW	-127 ~ +128	-2	GREEN. V SUB BOW	
	12	WAVE	-127 ~ +128	0	GREEN. V WAVE	
	13	4PIN	-127 ~ +128	10	GREEN. V 4th PIN	
R RH	00	CENT	-127 ~ +128	-30	RED. H CENTER	CXP85112B-613S
	01	SKEW	-127 ~ +128	0	RED. H SKEW	
	02	BOW	-127 ~ +128	0	RED. H BOW	
	03	4BOW	-127 ~ +128	0	RED. H 4th BOW	
	04	SIZE	-127 ~ +128	0	RED. H SIZE	
	05	LIN	-127 ~ +128	-10	RED. H LINEARITY	
	06	MSIZ	-127 ~ +128	-5	RED. H MIDDLE SIZE	
	07	MLIN	-127 ~ +128	-5	RED. H MIDDLE LINEARITY	
	08	KEY	-127 ~ +128	-5	RED. H KEY	
	09	SSKW	-127 ~ +128	0	RED. H SUB SKEW	
	10	MPIN	-127 ~ +128	30	RED. H MIDDLE PIN	
	11	PIN	-127 ~ +128	10	RED. H PIN	

	Item number	Adjustment item	Data range	Initial data	Note	Device
RRH	12	SBOW	-127 ~ +128	30	RED. H SUB BOW	CXP85112B-613S
	13	MBOW	-127 ~ +128	3	RED. H MIDDLE BOW	
	14	4PIN	-127 ~ +128	-3	RED. H 4th PIN	
	15	4SBOW	-127 ~ +128	-2	RED. H 4th SUB BOW	
R RV	00	CENT	-127 ~ +128	10	RED. V CENTER	CXP85112B-613S
	01	SKEW	-127 ~ +128	0	RED. V SKEW	
	02	BOW	-127 ~ +128	2	RED. V BOW	
	03	SIZE	-127 ~ +128	0	RED. V SIZE	
	04	LIN	-127 ~ +128	0	RED. V LINEARITY	
	05	MSIZ	-127 ~ +128	0	RED. V MIDDLE SIZE	
	06	MKEY	-127 ~ +128	10	RED. V MIDDLE KEY	
	07	KEY	-127 ~ +128	10	RED. V KEY	
	08	SSKW	-127 ~ +128	0	RED. V SUB SKEW	
	09	MPIN	-127 ~ +128	25	RED. V MIDDLE PIN	
	10	PIN	-127 ~ +128	5	RED. V PIN	
	11	SBOW	-127 ~ +128	-2	RED. V SUB BOW	
	12	WAVE	-127 ~ +128	15	RED. V WAVE	
	13	4PIN	-127 ~ +128	10	RED. V 4th PIN	
R BH	00	BSEL	0/1	0	RESISTRATION $\mu$ CON BSEL	CXP85112B-613S
	01	CENT	-127 ~ +128	30	BLUE. H CENTER	
	02	SKEW	-127 ~ +128	0	BLUE. H SKEW	
	03	BOW	-127 ~ +128	0	BLUE. H BOW	
	04	4BOW	-127 ~ +128	0	BLUE. H 4th BOW	
	05	SIZE	-127 ~ +128	-1	BLUE. H SIZE	
	06	LIN	-127 ~ +128	-10	BLUE. H LINEARITY	
	07	MSIZ	-127 ~ +128	-5	BLUE. H MIDDLE SIZE	
	08	MLIN	-127 ~ +128	5	BLUE. H MIDDLE LINEARITY	
	09	KEY	-127 ~ +128	0	BLUE. H KEY	
	10	SSKW	-127 ~ +128	0	BLUE. H SUB SKEW	
	11	MPIN	-127 ~ +128	30	BLUE. H MIDDLE PIN	
	12	PIN	-127 ~ +128	0	BLUE. H PIN	
	13	SBOW	-127 ~ +128	-30	BLUE. H SUB BOW	
	14	MBOW	-127 ~ +128	-3	BLUE. H MIDDLE BOW	
	15	4PIN	-127 ~ +128	-3	BLUE. H 4th PIN	
	16	4SBOW	-127 ~ +128	2	BLUE. H 4th SUB BOW	
R BV	00	CENT	-127 ~ +128	0	BLUE. V CENTER	CXP85112B-613S
	01	SKEW	-127 ~ +128	0	BLUE. V SKEW	
	02	BOW	-127 ~ +128	2	BLUE. V BOW	
	03	SIZE	-127 ~ +128	-10	BLUE. V SIZE	
	04	LIN	-127 ~ +128	0	BLUE. V LINEARITY	
	05	MSIZ	-127 ~ +128	0	BLUE. V MIDDLE SIZE	
	06	MKEY	-127 ~ +128	-10	BLUE. V MIDDLE KEY	

	Item number	Adjustment item	Data range	Initial data	Note	Device
R BV	07	KEY	-127 ~ +128	0	BLUE. V KEY	CXP85112B-613S
	08	SSKW	-127 ~ +128	0	BLUE. V SUB SKEW	
	09	MPIN	-127 ~ +128	25	BLUE. V MIDDLE PIN	
	10	PIN	-127 ~ +128	0	BLUE. V PIN	
	11	SBOW	-127 ~ +128	10	BLUE. V SUB BOW	
	12	WAVE	-127 ~ +128	-15	BLUE. V 3th WAVE	
	13	4PIN	-127 ~ +128	10	BLUE. V 4th PIN	

#### D/A

	Item number	Adjustment item	Data range	Initial data	Note	Device
D/A	00	BKU	0 ~ 63	63	VBLK UP-SIDE	CXA1315PM
	01	BKD	0 ~ 63	0	VBLK DOWN-SIDE	

#### MCD

	Item number	Adjustment item	Data range	Initial data	Note	Device
MCD	00	MHUE	0 ~ 31	15	SUB HUE OF MAIN PICTURE	TDA9141 TDA9143
	01	YDLT	0 ~ 15	7	Y DELAY	

#### SCD

	Item number	Adjustment item	Data range	Initial data	Note	Device
SCD	00	SHUE	0 ~ 31	15	SUB HUE OF SUB PICTURE	TDA9160

#### RGB

	Item number	Adjustment item	Data range	Initial data	Note	Device
RGB	00	SCOL	0 ~ 15	4	SUB COLOUR	TDA4780
	01	SBRT	0 ~ 63	27	SUB BRIGHT	
	02	RAMP	0 ~ 63	31	RED GAIN	
	03	GAMP	0 ~ 63	31	GREEN GAIN	
	04	BAMP	0 ~ 63	31	BLUE GAIN	
	05	RCUT	0 ~ 63	31	RED LEVEL REFERENCE	
	06	GCUT	0 ~ 63	31	GREEN LEVEL REFERENCE	
	07	BCUT	0 ~ 63	31	BLUE LEVEL REFERENCE	
	08	PDL	0 ~ 63	31	PEAK DRIVE LIMITER	
	09	GNMA	0 ~ 63	0	GAMMA	
	10	ADBL	0/1	0	ADAPTIVE BLACK	
	11	RELC	0/1	1	RELATIVE TO CUT-OFF	
	12	TCPL	0/1	1	TIME CONSTANT PEAK DRIVE LIMITER	

## PIP

	Item number	Adjustment item	Data range	Initial data	Note	Device
PIP	00	RDV	0 ~ 15	8	V READ DELAY	SDA9188-3X
	01	RDH	0 ~ 63	16	H READ DELAY	
	02	FRY	0 ~ 15	3	BRIGHTNESS OF THE BORDER FRAME	
	03	9V50	0 ~ 7	3	MULTI PIP V 50Hz	
	04	9H50	0 ~ 7	2	MULTI PIP H 50Hz	
	05	9V60	0 ~ 7	2	MULTI PIP V 60Hz	
	06	9H60	0 ~ 7	3	MULTI PIP H 60Hz	
	07	SCON	0 ~ 15	8	CONTRAST D/A CONVERTER	

## IPQ

	Item number	Adjustment item	Data range	Initial data	Note	Device
IPQ	00	CIN	0 / 1	0	CINE MODE (ABAB RASTER) OFF/ON	83C652
	01	107	0 / 1	1	MEMORY CONFIGURATION TMS4C2972 SWITCH	
	02	LFR	0 / 1	1	LINE FLICKER REDUCTION MODE OFF/ON	
	03	HWE	0 ~ 15	15	HWE 1 LINE DEALY OFF SET TO DEFAULT	
	04	NR	0 ~ 3	2	NOISE REDUCTION LEVEL	
	05	Y-V	0 ~ 255	60	Y-VALUE (BRIGHTNESS)	
	06	UV-V	0 ~ 255	0	UV-VALUE (COLOUR)	
	07	PEAK	0 ~ 127	10	PEAKING	
	08	CTI	0 ~ 127	64	CTI LEVEL DATA	
	09	VWE	0 ~ 63	31	VWE1 DELAY	

## TXT

	Item number	Adjustment item	Data range	Initial data	Note	Device
TXT	00	TXH	0 ~ 255	9	H START POSITION	TPU3040/TPU3041
	01	TXV	0 ~ 63	44	V START POSITION	
	02	VSP	0 ~ 255	59	V STOP POSITION	
	03	BSP	0 ~ 255	61	BLANKING STOP	
	04	BST	0 ~ 255	53	BLANKING START	
	05	QSF	0 ~ 31	1	ACQUISITION SOFT SLICER	
	06	A7F	0 ~ 255	10	VALUE OF ADDRESS 007FH	
	07	QDT	0 ~ 63	13	ACQUISITION DATA SLICER	
	08	CST	0 ~ 255	0	CLAMPING START	
	09	CSP	0 ~ 255	80	CLAMPING STOP	
	10	LMT	0 / 1	0	LIMIT SLICER ADAPTION SW	
	11	GMX	0 ~ 255	31	GAIN MAX	
	12	FMX	0 ~ 255	31	FILTER MAX	
	13	TVER	0 ~ 3	3	TPU VERSION (TC2023)	
	14	CSET	0 ~ 7	3	TELETEXT LANGUAGE SETTING 3: WEST (AEP/UK) 5: EAST (K), 6: GREEK	

## AP

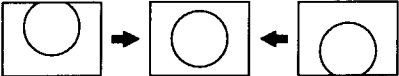
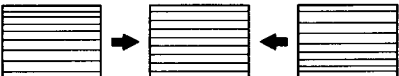
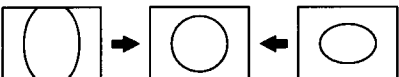

	Item number	Adjustment item	Data range	Initial data	Note	Device
AP	00	FAW	0 ~ 255	10	NICAM FAW THRESHOLD	MSP3410
	01	CTM	0 ~ 255	4	NICAM ERROR BIT THRESHOLD(MONO→NICAM)	
	02	CTN	0 ~ 255	80	NICAM ERROR BIT THRESHOLD(NICAM→MONO)	
	03	WGO	0 ~ 255	10	WEST GERMAN STEREO LOW THRESHOLD	
	04	WGS	0 ~ 255	21	WEST GERMAN STEREO HIGH THRESHOLD	
	05	WGT	0 ~ 255	80	WEST GERMAN STEREO LOW 2 THRESHOLD	
	06	WGB	0 ~ 255	250	WEST GERMAN STEREO HIGH 2 THRESHOLD	
	07	ACG	0 / 1	1	AGC AUTO / CONSTANT SWITCH	
	08	CDB	0 ~ 63	30	AGC GAIN VALUE AT CONSTANT MODE	
	09	FMP	0 ~ 127	26	FM MONO PRESCALE	
	10	WGP	0 ~ 127	26	WEST GERMAN STEREO PRESCALE	
	11	INIP	0 ~ 127	127	I NICAM PRESCALE	
	12	BNIP	0 ~ 127	72	B/G NICAM PRESCALE	
	13	LNIP	0 ~ 127	81	L NICAM PRESCALE	
	14	DNIP	0 ~ 127	72	D/K NICAM PRESCALE	
	15	CRM	0 / 1	0	CARRIER MUTE FUNCTION	
	16	ACO	0 / 1	1	AUDIO CLOCK OUT OFF/ON	
	17	WAC	0 ~ 15	1	WEST GERMAN STEREO JUDGE CONSTANT	

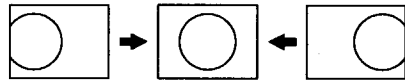
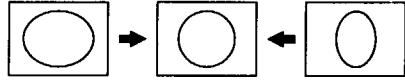



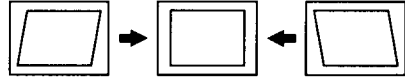

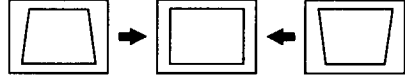
## CPU

	Item number	Adjustment item	Data range	Initial data	Note	Device
CPU	00	OSH	0 ~ 63	18	OSD H POSITION	CXP85460
	01	ODL	0 ~ 256	15	POWER ON DELAY	
	02	FTZP	0 / 1	1	FTZ MUTE PRIORITY	
	03	RGBP	0 / 1	0	RGB MODE PRIORITY	
	04	NICP	0 / 1	1	NICAM PRIORITY	
	05	B/G	0 / 1	1	TV SYSTEM B/G OFF/ON	
	06	I	0 / 1	1	TV SYSTEM I OFF/ON	
	07	IRE	0 / 1	0	TV SYSTEM IRE OFF/ON	
	08	D/K	0 / 1	1	TV SYSTEM D/K OFF/ON	
	09	AUS	0 / 1	0	TV SYSTEM AUS OFF/ON	
	10	L	0 / 1	1	TV SYSTEM L OFF/ON	
	11	MYC 2	0 / 1	0	YC2/AV2 PRIORITY	
	12	MYC 4	0 / 1	0	YC4/AV4 PRIORITY	

## IP 2

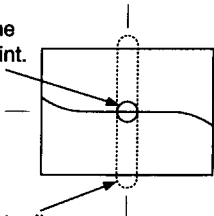
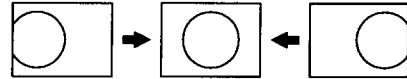



	Item number	Adjustment item	Data range	Initial data	Note	Device
IP2	00	BOX	0 / 1	0	BOX FUNCTION SWITCH	TDA9160
	01	SCF	0 ~ 3	0	SCREEN FADE FUNCTION	
	02	SPS	0 ~ 3	0	SPLIT SCREEN FUNCTION	
	03	PHAS	0 / 1	0	PHASE FLAG	
	04	AXIS	0 / 1	1	RGB AXIS	
	05	HSFT	0 ~ 31	10	H. SHIFT ADJUSTMENT	
	06	SFTE	0 / 1	1	PICTURE SHIFT ENABLE	
	07	SFTF	0 / 1	0	PICTURE SHIFT FACTORY CHECK	
	08	3BCN	0 ~ 255	10	BINARY BIT CHECK FOR TELETEXT	

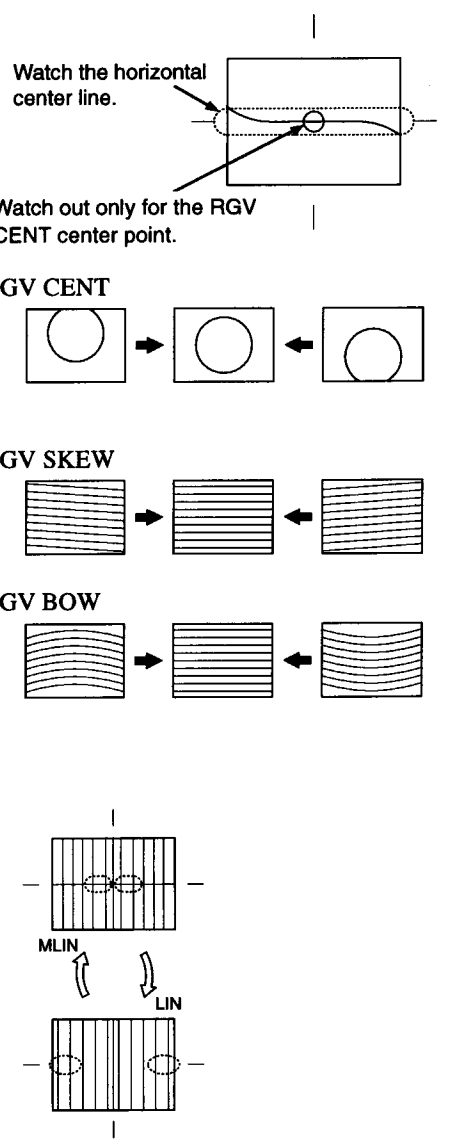
ADJUSTMENT ITEM AND PROCEDURE	EQUIPMENT AND SIGNAL	MEASUREMENT POSITION	ADJUSTMENT LOCATION	ILLUSTRATION AND SHAPE AND NUMBER
<p><b>CONVERGENCE ADJUSTMENT</b></p> <ul style="list-style-type: none"> <li>When replacing the deflection yoke, always perform "DEFLECTION YOKE TILT ADJUSTMENT" before adjusting the convergence.</li> </ul> <p>Adjustment procedure</p> <pre> graph TD     A[VSP MAIN] --&gt; B[R GH (SUB), R GV (SUB)]     B --&gt; A     B --&gt; C[R RH (SUB), R RV (SUB)]     C --&gt; D[R BH (SUB), R BV (SUB)]           </pre> <p><b>• GREEN REGISTRATION ADJUSTMENT</b></p> <ul style="list-style-type: none"> <li>V-SHIFT adjustment</li> <li>V-LINEARITY adjustment</li> <li>V-SIZE, V-CORRECTION adjustment While tracking, adjust so that the lattice intervals for VSIZ and VSCO are equal.</li> </ul>	<p>Monoscope pattern or Crosshatch pattern</p>		<p>&lt;VSP MENU&gt; VSP VPOS</p> <p>VSP VLIN</p> <p>VSP VSIZ VSP VSCO</p>	<p>VPOS</p>  <p>VLIN</p>  <p>VSIZ</p>  <p>VSCO</p> 

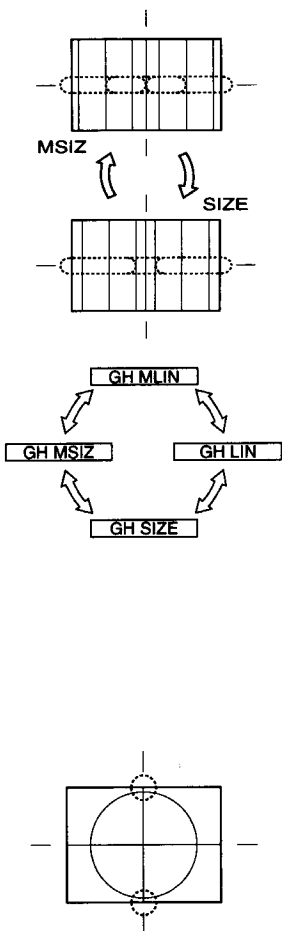
ADJUSTMENT ITEM AND PROCEDURE	EQUIPMENT AND SIGNAL	MEASUREMENT POSITION	ADJUSTMENT LOCATION	ILLUSTRATION AND SHAPE AND NUMBER
<ul style="list-style-type: none"> <li>• H-SHIFT adjustment</li> <li>• H-SIZE adjustment Finely adjust with SUB MSIZ.</li> <li>• PIN-AMP adjustment Finely adjust with SUB MPIN.</li> <li>• UPPER/LOWER-CORNER PIN adjustment Correct the screens top and bottom bow line. However, if this adjustment is overdone, distortion may occur with the PIN-AMP adjustment that can not be re-adjusted.</li> <li>Note : The PIN-AMP adjusts the overall screen from top to bottom, but the UPPER/LOWER-CORNER PIN adjustments have large movement in the top and bottom sections, so be careful.</li> <li>• V-ANGLE, V-BOW adjustment Correct the tilt and bow of the vertical line at the center of the screen.</li> <li>• TILT adjustment Adjust to eliminate the tilt of one of the two vertical lines at both ends of the screen.</li> </ul>			<p>VSP HPOS</p> <p>VSP HSIZ</p> <p>VSP HPIN</p> <p>VSP UPCP VSP LOCP</p> <p>VSP HSKE VSP HBOW</p> <p>VSP HKEY</p>	<p>HPOS</p>  <p>HSIZ</p>  <p>HPIN</p>  <p>UPCP</p>  <p>LOCP</p>  <p>HSKE</p>  <p>HBOW</p>  <p>HKEY</p> 

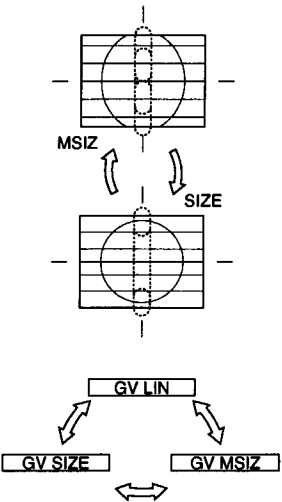
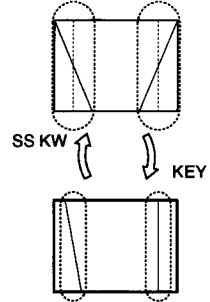
ADJUSTMENT ITEM AND PROCEDURE		EQUIPMENT AND SIGNAL	MEASUREMENT POSITION	ADJUSTMENT LOCATION	ILLUSTRATION AND SHAPE AND NUMBER		
CONVERGENCE SUB ADJUSTMENT							
Adjustment      O : Yes    - : No							
Display	Adjustment item	Adjustment type					
		RGH	RGV	RRH	RRV	RBH	RBV
BSEL	COL SELECT	-	-	-	-	O	-
CENT	CENT	O	O	O	O	O	O
SKEW	SKEW	O	O	O	O	O	O
BOW	BOW	O	O	O	O	O	O
4BOW	4TH BOW	O	-	O	-	O	-
SIZE	SIZE	O	O	O	O	O	O
LIN	LIN	O	O	O	O	O	O
MSIZ	MID SIZE	O	O	O	O	O	O
MLIN	MID LIN	O	O	O	-	O	-
MKEY	MID KEY	-	O	-	O	-	O
KEY	KEY	O	O	O	O	O	O
SSKW	SUB SKEW	O	O	O	O	O	O
M PIN	MID PIN	O	O	O	O	O	O
PIN	PIN	O	O	O	O	O	O
SBOW	SUB BOW	O	O	O	O	O	O
WAVE	WAVE	-	O	-	O	-	O
MBOW	MID BOW	O	-	O	-	O	-
4PIN	4TH PIN	O	O	O	O	O	O
4SBOW	4TH SUB BOW	O	-	O	-	O	-

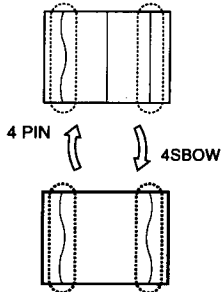
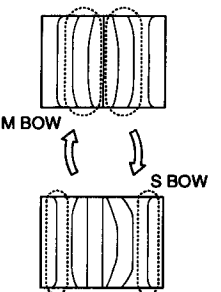


ADJUSTMENT ITEM AND PROCEDURE	EQUIPMENT AND SIGNAL	MEASUREMENT POSITION	ADJUSTMENT LOCATION	ILLUSTRATION AND SHAPE AND NUMBER
<p><b>• GREEN SUB ADJUSTMENT</b></p> <p><b>SCREEN CENTER SECTION GREEN VERTICAL LINE ADJUSTMENT</b></p> <p>1. Finely adjust with RGH CENT, RGH BOW, RGH SKEW. Adjust by watching out for the RGH CENT screen center section.</p> <p>2. RGH 4TH BOW adjustment Correct the corner distortion that could not be adjusted away with the RGH 4BOW adjustment.</p>			<p>&lt;RGH MENU&gt; RGH CENT RGH BOW RGH SKEW</p> <p>RGH 4BOW</p>	<p>Watch out only for the GH CENT center point.</p>  <p>Watch the vertical center line.</p> <p><b>RGH CENT</b></p>  <p><b>RGH BOW</b></p>  <p><b>RGH SKEW</b></p>  <p><b>RGH 4BOW</b></p> 

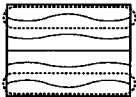
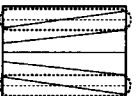
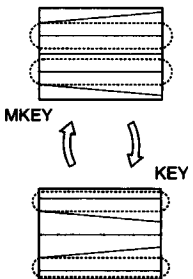
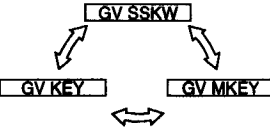
ADJUSTMENT ITEM AND PROCEDURE	EQUIPMENT AND SIGNAL	MEASUREMENT POSITION	ADJUSTMENT LOCATION	ILLUSTRATION AND SHAPE AND NUMBER
<p><b>SCREEN CENTER SECTION GREEN HORIZONTAL LINE ADJUSTMENT</b></p> <ol style="list-style-type: none"> <li>1. Finely adjust the center position of the vertical line at the center of the screen with RGV CENT.</li> <li>2. Correct the tilt and bow of the horizontal line at the center of the screen with RGV SKEW and RGV BOW.</li> </ol> <p><b>GREEN SIZE AND LINEARITY ADJUSTMENT</b></p> <ol style="list-style-type: none"> <li>1. Balance the sizes at both sides of the center section of the screen with RGH MLIN.</li> <li>2. Balance the sizes on both end sections of the screen with RGH LIN.</li> <li>3. While tracking, adjust with RGH MLIN and RGH LIN so that the sizes of the horizontal line at the center of the screen are symmetrical left and right.</li> </ol>			<p>&lt;RGV MENU&gt;</p> <p>RGV CENT</p> <p>RGV SKEW RGV BOW</p> <p>&lt;RGH MENU&gt;</p> <p>RGH MLIN RGH LIN</p>	 <p>Watch the horizontal center line.</p> <p>Watch out only for the RGV CENT center point.</p> <p>RGV CENT</p> <p>RGV SKEW</p> <p>RGV BOW</p> <p>RGH MLIN</p> <p>RGH LIN</p>

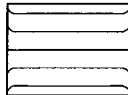
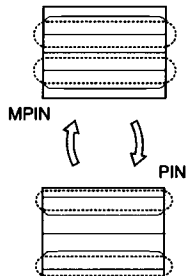
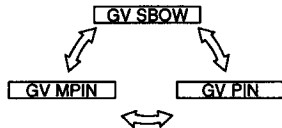
ADJUSTMENT ITEM AND PROCEDURE	EQUIPMENT AND SIGNAL	MEASUREMENT POSITION	ADJUSTMENT LOCATION	ILLUSTRATION AND SHAPE AND NUMBER
<p><b>GREEN HORIZONTAL SIZE ADJUSTMENT</b></p> <ol style="list-style-type: none"> <li>1. Adjust with RGH MSIZE so that the sizes of both ends and of both sides of the center section of the screen are equal.</li> <li>2. Adjust with RGH SIZE so that the horizontal sizes of both ends and of both sides of the center section of the screen are equal.</li> <li>3. While tracking, adjust with RGH MSIZ and RGH SIZE so that the lattice intervals for the horizontal line section of the center section of the screen are equal and so that the horizontal size is the prescribed value.</li> <li>4. If M LIN is changed when the RGH MSIZ and RGH SIZE adjustment is complete, adjust again while tracking.</li> </ol> <p>●With just the H SIZE adjustment in MAIN, if there is no need to adjust RGH SIZE in SUB this can save power.</p> <p><b>GREEN VERTICAL LINEARITY ADJUSTMENT</b></p> <ol style="list-style-type: none"> <li>1. Adjust RGV LIN so that the vertical lines at the top and bottom of the screen are symmetrical.</li> </ol>			<p>&lt;RGH MENU&gt; RGH MSIZ  RGH SIZE</p> <p>&lt;RGV MENU&gt; RGV LIN</p>	 <p>The illustration for Green Horizontal Size Adjustment consists of three parts. The top part shows a rectangular grid with a horizontal dashed line through the center, labeled 'MSIZ' on the left and 'SIZE' on the right, with arrows indicating adjustment. The middle part shows a similar grid with a horizontal dashed line, labeled 'GH MSIZ' on the left and 'GH SIZE' on the right, with arrows indicating adjustment. The bottom part shows a circular diagram with four labels: 'GH MLIN' at the top, 'GH MSIZ' on the left, 'GH LIN' on the right, and 'GH SIZE' at the bottom, with arrows indicating adjustment.</p> <p>The illustration for Green Vertical Linearity Adjustment shows a square frame with a circle inside, labeled 'RGV LIN' at the top, with arrows indicating adjustment.</p>

ADJUSTMENT ITEM AND PROCEDURE	EQUIPMENT AND SIGNAL	MEASUREMENT POSITION	ADJUSTMENT LOCATION	ILLUSTRATION AND SHAPE AND NUMBER
<p><b>GREEN VERTICAL SIZE ADJUSTMENT</b></p> <ol style="list-style-type: none"> <li>1. Adjust with RGV MSIZE so that the sizes for the top and bottom sections of the screen and for both sides of the center section of the screen are equal.</li> <li>2. Set the vertical size to the prescribed value with RGV SIZE.</li> <li>3. Adjust RGV MSIZ and RGV SIZE watching the vertical line at the center section of the screen.</li> <li>4. While tracking, adjust with RGV MSIZ and RGV SIZE so that the lattice intervals for the vertical line section of the center section of the screen are equal and so that the vertical size is the regulation value.</li> <li>5. If RGV LIN is out of place when the RGV MSIZ and RGV SIZE adjustment is complete, adjust again while tracking.</li> </ol> <p>●If there is no need to adjust RGV SIZE in SUB with just the V SIZE adjustment in MAIN, this can save power.</p>			<p>&lt;RGV MENU&gt; RGV MSIZ</p> <p>RGV SIZE</p>	
<p><b>GREEN HORIZONTAL TRAPEZOIDAL DISTORTION ADJUSTMENT</b></p> <ol style="list-style-type: none"> <li>1. Adjust with RGH SSKW so that the tilt of the vertical lines at both ends of the screen is symmetrical left and right.</li> <li>2. Adjust with RGH KEY so that there is no tilt in the vertical lines at both ends of the screen.</li> <li>3. If there is a tilt on either the left or right after the RGH KEY adjustment, adjust while tracking.</li> </ol>			<p>&lt;RGV MENU&gt; RGH SSKW</p> <p>RGH KEY</p>	

ADJUSTMENT ITEM AND PROCEDURE	EQUIPMENT AND SIGNAL	MEASUREMENT POSITION	ADJUSTMENT LOCATION	ILLUSTRATION AND SHAPE AND NUMBER
<p><b>GREEN HORIZONTAL QUATERNARY ADJUSTMENT</b></p> <ol style="list-style-type: none"> <li>1. Correct the quaternary distortion with RGH 4PIN.</li> <li>2. While balancing, correct the quaternary distortion of both end sections of the screen with RGH 4SBOW.</li> <li>3. While tracking, adjust with RGH 4PIN and RGH 4SBOW.</li> </ol>			<p>&lt;RGH MENU&gt;</p> <p>RGH 4PIN RGH 4SBOW</p>	
<p><b>GREEN HORIZONTAL ASYMMETRICAL PIN DISTORTION ADJUSTMENT</b></p> <ol style="list-style-type: none"> <li>1. Adjust with RGH MBOW so that the pin asymmetry at both sides of the center section of screen is symmetrical.</li> <li>2. Adjust with RGH SBOW so that the bow at both end sections of the screen is symmetrical left and right.</li> <li>3. While tracking, adjust with RGH MBOW and RGH SBOW so that the bow of vertical lines on the entire screen is symmetrical left and right.</li> </ol>			<p>&lt;RGH MENU&gt;</p> <p>RGH MBOW RGH SBOW</p>	

ADJUSTMENT ITEM AND PROCEDURE	EQUIPMENT AND SIGNAL	MEASUREMENT POSITION	ADJUSTMENT LOCATION	ILLUSTRATION AND SHAPE AND NUMBER
<b>GREEN HORIZONTAL SYMMETRICAL PIN DISTORTION</b> <b>ADJUSTMENT</b> <ol style="list-style-type: none"> <li>Adjust the pin distortion at both sides of the center section of the screen with RGH MPIN.</li> <li>Adjust the pin distortion at both end sections of the screen with RGH PIN.</li> <li>While tracking, adjust with RGH MPIN and RGH PIN so that the PIN of vertical lines on the entire screen have no bowing.</li> <li>If there is asymmetrical pin distortion after the RGH MPIN and RGH PIN adjustments, adjust with RGH MBOW and RGH SBOW while tracking.</li> </ol> <p>● With just the PIN AMP adjustment in MAIN, if there is no need to adjust RGV PIN in SUB, this can save power.</p>			<RGH MENU>  RGH MPIN  RGH PIN  RGH MBOW RGH SBOW	
<b>GREEN VERTICAL WAVE (TERTIARY DISTORTION)</b> <b>ADJUSTMENT</b> <ol style="list-style-type: none"> <li>Take the screen top and bottom horizontal lines with RGV WAVE and find the secondary and quaternary waveform.</li> <li>There is KEY distortion after the RGV WAVE adjustment, so adjust with RGV WAVE and RGV KEY while tracking.</li> </ol>			<RGV MENU>  RGV WAVE  RGV KEY	

ADJUSTMENT ITEM AND PROCEDURE	EQUIPMENT AND SIGNAL	MEASUREMENT POSITION	ADJUSTMENT LOCATION	ILLUSTRATION AND SHAPE AND NUMBER
<b>GREEN VERTICAL QUATERNARY DISTORTION</b> <b>ADJUSTMENT</b> <ol style="list-style-type: none"> <li>Correct the quaternary distortion of the horizontal lines at the top and bottom sections of the screen with RGV 4PIN.</li> <li>Since there is no 4SBOW for vertical correction, there will be a slight imbalance, but adjust to eliminate the distortion from the horizontal line at either the top or the bottom of the screen.</li> <li>In many cases, the horizontal lines at the top and bottom sections of the screen are not straight lines after the adjustment. As long as the secondary distortion is mild enough that it can be corrected with the PIN adjustment, this is OK.</li> </ol>			<RGV MENU>  RGV 4PIN	RGV 4PIN  
<b>GREEN VERTICAL TRAPEZOIDAL DISTORTION</b> <b>ADJUSTMENT</b> <ol style="list-style-type: none"> <li>Adjust with RGV SSKW so that the tilt of the horizontal lines at the top and bottom sections of the screen is symmetrical about the center position horizontal line.</li> <li>Adjust with RGV MKEY so that there is no tilt for the line sections at both sides of the horizontal lines at the center section of the stream.</li> <li>Adjust with RGV KEY so that there is no tilt for the horizontal lines at the top and bottom sections of the screen.</li> <li>While tracking, adjust with RGV MKEY and RGV KEY so that there is no tilt for the horizontal lines on the entire screen.</li> <li>If the tilt is unbalanced after the RGV MKEY and RGV KEY adjustment, adjust again with RGV SSKW.</li> </ol>			<RGV MENU>  RGV SSKW  RGV MKEY  RGV KEY   RGV SSKW	RGV SSKW      

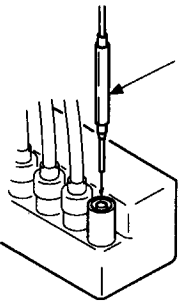
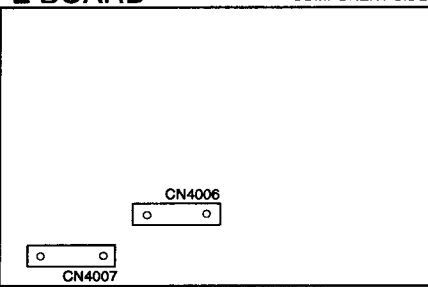
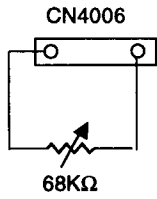
ADJUSTMENT ITEM AND PROCEDURE	EQUIPMENT AND SIGNAL	MEASUREMENT POSITION	ADJUSTMENT LOCATION	ILLUSTRATION AND SHAPE AND NUMBER
<b>GREEN VERTICAL ASYMMETRICAL PIN DISTORTION (SECONDARY DISTORTION) ADJUSTMENT</b> 1. Correct the asymmetrical pin distortion at the top and bottom sections of the screen with RGV SBOW.			<RGV MENU>  RGV SBOW	RGV SBOW 
<b>GREEN VERTICAL ASYMMETRICAL PIN DISTORTION ADJUSTMENT</b> 1. Adjust the pin distortion for both side sections and the center of the screen with RGV MPIN. 2. Adjust with RGV PIN so that the horizontal lines at the top and bottom sections of the screen are straight lines. 3. Adjust with RGV MPIN and RGV PIN so that there is no curve in the horizontal lines on the entire screen.			<RGV MENU>  RGV MPIN RGV PIN	
4. After the adjustments in Items 1-3, adjust the tracking with RGV SBOW, RGV MPIN, and RGV PIN.			RGV SBOW	

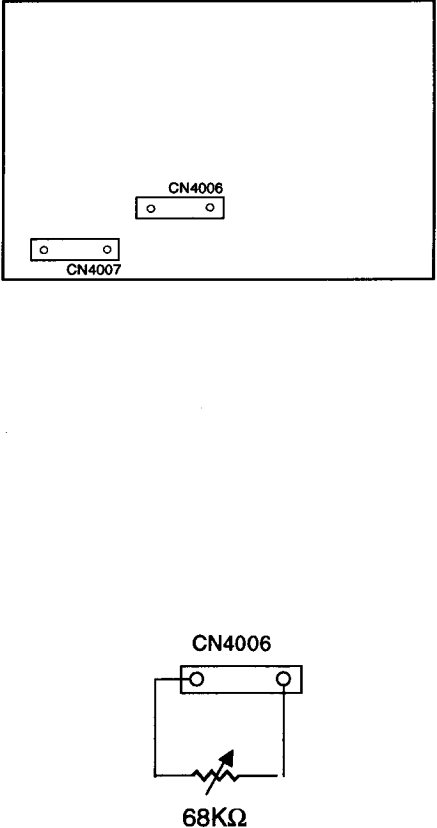


ADJUSTMENT ITEM AND PROCEDURE	EQUIPMENT AND SIGNAL	MEASUREMENT POSITION	ADJUSTMENT LOCATION	ILLUSTRATION AND SHAPE AND NUMBER
<p><b>GREEN AND RED REGISTRATION ADJUSTMENT (RRH, RRV)</b></p> <ol style="list-style-type: none"> <li>1. Receive a PAL cross-hatch signal.</li> <li>2. Adjust so that the red lines lay on the green lines. Adjust with the same procedure as the GREEN SUB adjustment.</li> </ol> <p>Notes: 1. The main correction is not carried out during red registration adjustment. 2. Beware. The green adjustment items can be changed by mistake. 3. Unlike for green, adjust within the range -127 ~ +128.</p> <p><b>GREEN AND BLUE REGISTRATION ADJUSTMENT (RBH, RBV)</b></p> <ol style="list-style-type: none"> <li>1. Receive a PAL cross-hatch signal.</li> <li>2. Adjust so that the blue and green lines are on top of each other.</li> </ol> <p>Notes : 1. The main correction is not carried out during RED registration adjustment. 2. Beware. The GREEN and RED adjustment items can be changed by mistake.</p>	<p>PAL Cross-hatch pattern</p> <p>PAL Cross-hatch pattern</p>			

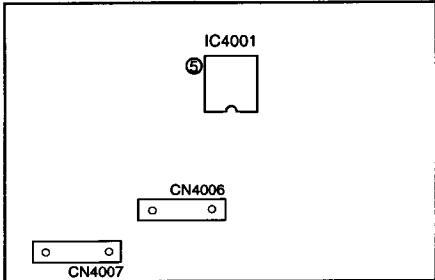
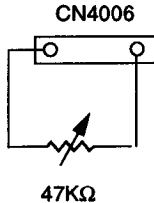
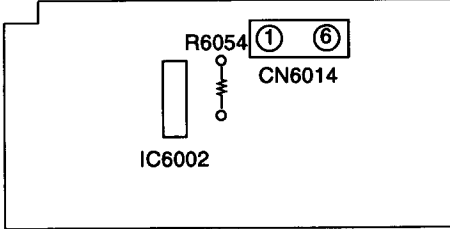
ADJUSTMENT ITEM AND PROCEDURE	EQUIPMENT AND SIGNAL	MEASUREMENT POSITION	ADJUSTMENT LOCATION	ILLUSTRATION AND SHAPE AND NUMBER
<div>AGC ADJUSTMENT</div> <ol style="list-style-type: none"> <li>1. Receive an off-air signal.</li> <li>2. Adjust the AGC VR ( IF 1001 ) so that there is no snow noise and cross-modulation.</li> </ol> <div>WHITE BALANCE ADJUSTMENT</div> <ol style="list-style-type: none"> <li>1. Receive the monoscope pattern signal and adjust the picture quality with the menu.</li> <li>2. Adjust service mode SBRT so that the signal 10 IRE section barely glows.</li> <li>3. Receive the all-white pattern signal.</li> <li>4. Adjust the white balance with service mode GCUT and BCUT.</li> <li>5. Adjust service mode SBRT so that the signal 100 IRE section barely glows.</li> <li>6. Adjust the white balance with service mode GAMP and BAMP.</li> <li>7. Repeatedly adjust the white balance for the minimum and maximum picture settings.</li> </ol>	<div>Monoscope pattern</div> <div>All White pattern</div>		<div>PICTURE</div> <div>..... minimum</div> <div>&lt; RGB MENU &gt;</div> <div>RGB SBRT</div> <div>RGB GCUT</div> <div>RGB BCUT</div> <div>PICTURE</div> <div>..... minimum</div> <div>RGB GAMP</div> <div>RGB BAMP</div> <div>PICTURE</div> <div>..... maximum</div>	

## SECTION 4 SAFETY RELATED ADJUSTMENTS

ADJUSTMENT ITEM AND PROCEDURE	EQUIPMENT AND SIGNAL	MEASUREMENT POSITION	ADJUSTMENT LOCATION	ILLUSTRATION AND SHAPE AND NUMBER
<p><b>[ E BOARD ]</b></p> <p><b>HV HOLD DOWN CIRCUIT OPERATION CHECK AND ADJUSTMENT</b></p> <p>When replacing the following components marked with <input checked="" type="checkbox"/> on the schematic diagram, always check hold-down voltage and if necessary re-adjust.</p> <p><b>OPERATION CHECK</b></p> <ol style="list-style-type: none"> <li>1. Connect a HV static voltmeter to the unconnected plug of the high-voltage block.</li> <li>2. Connect a 68k<math>\Omega</math> variable resistor, set to maximum value, across CN4006.</li> <li>3. Power on the set.</li> <li>4. Receive dot signal pattern.</li> <li>5. Gradually lower the value of the variable resistor and check that the hold-down circuit operates at a static voltmeter reading of 33.40<math>\pm</math>0.30kVdc when the raster disappears.</li> </ol> <p><b>HV HOLD-DOWN ADJUSTMENT</b></p> <ol style="list-style-type: none"> <li>1. REPEAT STEPS ① ~ ⑤ as above.</li> <li>2. Just at the point hold-down circuit begins to operate switch off the set.</li> <li>3. Remove the VR connected across CN4006, and measure it's resistance.</li> <li>4. Solder a resistor value, nearest to the measured value, across CN4007.</li> <li>5. Reconfirm operation check.</li> </ol>	<p>HIGH-VOLTAGE Voltmeter</p> <p>Dot pattern</p>	<p><input checked="" type="checkbox"/> marked parts C4057, D4026, R988, R4019, T4002, T4003 ( FBT ), E BOARD, HV Block</p> <p>HV Block</p> <p>CN4006</p> <p>HIGH-VOLTAGE Voltmeter 33.40 <math>\pm</math> 0.30kVdc</p>	<p><input checked="" type="checkbox"/> R988</p>	<p>Remove the cap off from the unused terminal and connect a static voltmeter there.</p>  <p><b>E BOARD</b> -COMPONENT SIDE-</p>  

ADJUSTMENT ITEM AND PROCEDURE	EQUIPMENT AND SIGNAL	MEASUREMENT POSITION	ADJUSTMENT LOCATION	ILLUSTRATION AND SHAPE AND NUMBER
<p><b>HV REGULATION CIRCUIT CHECK AND ADJUSTMENT</b></p> <p>When replacing the following components marked with <input checked="" type="checkbox"/> on the schematic diagram always check HV regulation, and if necessary re-adjust.</p> <p><b>OPERATION CHECK</b></p> <ol style="list-style-type: none"> <li>1. Connect a HV static voltmeter to the unconnected plug of the high-voltage block.</li> <li>2. Power on the set.</li> <li>3. Receive dot signal pattern.</li> <li>4. Check that the HV static voltmeter is reading <math>31.00 \pm 0.2 \text{ kVdc}</math>.</li> </ol> <p><b>HV Regulation adjustment</b></p> <ol style="list-style-type: none"> <li>1. Repeat step ① as above.</li> <li>2. Connect <math>68 \text{ k}\Omega</math> variable resistor, set to maximum value, to CN4006.</li> <li>3. Power on the set.</li> <li>4. Receive dot signal pattern.</li> <li>5. Gradually lower the value of the variable resistor until the static voltmeter is reading <math>31.00 \pm 0.20 \text{ kVdc}</math>.</li> <li>6. Switch off the set.</li> <li>7. Remove the VR connected across CN4006, and measure its value.</li> <li>8. Solder a resistor value, nearest to the measured value, across CN4006.</li> <li>9. Reconfirm operation check.</li> </ol>	<p>Dot pattern</p> <p>HIGH-VOLTAGE Voltmeter</p>	<p><input checked="" type="checkbox"/> marked parts C4033, C4034, C4046, C4047, C4049, D4012, D4018, D4023, D4028, D4035, R983, R4022, R4046, R4047, R4048, R4053, R4054, R4057, R4059, R4060, R4061, R4077, R4079, R4086, R4087, R4088, R4091, R4092, R4097, R4098, R4100, Q4013, T4002, T4003 ( FBT ), E Board, HV Block</p> <p>HIGH-VOLTAGE Voltmeter <math>31.00 \pm 0.20 \text{ kVdc}</math> CN4006</p>	<p><input checked="" type="checkbox"/> R983</p>	<p><b>E BOARD</b> <span style="float: right;">-COMPONENT SIDE-</span></p> 






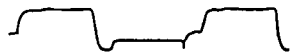


ADJUSTMENT ITEM AND PROCEDURE	EQUIPMENT AND SIGNAL	MEASUREMENT POSITION	ADJUSTMENT LOCATION	ILLUSTRATION AND SHAPE AND NUMBER
<div> <b>HV REGULATOR ADJUSTMENT WITHOUT USING STATIC HIGH VOLTAGEMETER ( R983 )</b> </div> <ol style="list-style-type: none"> <li>1. Receive DOT signal ( PICTURE : 80%, BRIGHTNESS : 50% ).</li> <li>2. Turn off the power of the projector.</li> <li>3. Remove R983 from CN4006.</li> <li>4. Fix a 47kΩ VR onto CN4006 with solder, and set the resistor value at maximum.</li> <li>5. Turn on the power of the projector. Connect a digital voltmeter to IC4001 ⑤ pin.</li> <li>6. Slowly turn the 47kΩ VR that is soldered to CN4006, and gradually lower the voltage of IC4001 ⑤ pin down to 1.49Vdc.</li> <li>7. Turn off the power of the projector.</li> <li>8. Remove the 47kΩ VR from CN4006, and measure the resistor value with the digital voltmeter. Put a resistor ( metal oxide, 1/4W ) that has same value as the measured resistor onto CN4006 and solder it.</li> <li>9. Turn on the power of the projector. Check if the voltage of IC4001 ⑤ pin is between 1.46 and 1.53Vdc.</li> <li>10. Receive FULL WHITE signal ( PICTURE : 80%, BRIGHTNESS : 50% ).</li> <li>11. Turn off the power of the projector.</li> </ol> <div> <b>[ G BOARD ]</b> </div> <div> <b>+B MAX VOLTAGE CONFIRMATION</b> </div> <p>The following adjustments should always be performed when replacing IC6002 and R6054.</p> <ol style="list-style-type: none"> <li>1. Supply 230VAC to with variable autotransformer.</li> <li>2. Input monoscope signal.</li> <li>3. Set the PICTURE control and the BRIGHTNESS controls to reset.</li> <li>4. Confirm the voltage of G BOARD CN6014 ① pin connector is less than <math>134.50 \pm 1.00</math>Vdc.</li> <li>5. If step 4 is not satisfied, replace IC6002 and R6054 repeat above steps.</li> </ol>	<p>Dot signal</p> <p>Digital voltmeter</p> <p>Full white pattern</p>	<p>IC4001 ⑤ pin</p> <p>CN6014 ① pin</p>	<div> R983 </div> <div> PICTURE .....80% BRIGHTNESS .....center </div> <div> PICTURE .....80% BRIGHTNESS .....center </div>	<div> <b>E BOARD</b> <div>-COMPONENT SIDE-</div>   </div> <div> <b>G BOARD</b> <div>- COMPONENT SIDE -</div>  <p>Voltage of CN6014 ① pin Less than <math>134.50 \pm 1.00</math>Vdc</p> </div>

## SECTION 5 ELECTRICAL ADJUSTMENTS

ADJUSTMENT ITEM AND PROCEDURE	EQUIPMENT AND SIGNAL	MEASUREMENT POSITION	ADJUSTMENT LOCATION	ILLUSTRATION AND SHAPE AND NUMBER
<b>B BOARD ADJUSTMENT</b>				
<b>SUB COLOUR (SCOL) ADJUSTMENT</b>				
<ol style="list-style-type: none"> <li>1. Input the PAL Colour Bar signal and adjustment the picture control.</li> <li>2. Set to service mode.</li> <li>3. Connect an oscilloscope between ②④ pin of IC409 and ground.</li> <li>4. Adjust SCOL so that <math>V_{cy} = V_{Mg} = V_{Bi}</math> in the waveform levels.</li> <li>5. Write the data to memory.</li> </ol>	PAL Colour Bar pattern  Oscilloscope	IC409 ②④ pin (B(3/4) Board)	PICTURE .... 80% RGB SCOL : $V_{cy} = V_{Mg} = V_{Bi}$	<p style="text-align: center;">&lt;IC409 ②④ pin&gt;</p> <p style="text-align: center;">63.5 μsec</p>
<b>SUB HUE (MHUE,SHUE) ADJUSTMENT</b>				
<ol style="list-style-type: none"> <li>1. Input the NTSC Colour Bar signal.</li> <li>2. Set to service mode.</li> <li>3. Connect an oscilloscope between ②④ pin of IC409 and ground.</li> <li>4. Adjust MHUE so that <math>V_{cy} = V_{Mg}</math> in the waveform levels.</li> <li>5. Write the data to memory.</li> </ol>	NTSC Colour Bar pattern Oscilloscope	IC409 ②④ pin (B(3/4) Board)	MCD MHUE : $V_{cy} = V_{Mg}$	<p style="text-align: center;">&lt;IC409 ②④ pin&gt;</p> <p style="text-align: center;">63.5 μsec</p>
(PIP MODE) <ol style="list-style-type: none"> <li>1. Input the NTSC Colour Bar signal.</li> <li>2. Select PIP on screen mode and put the set into service mode.</li> <li>3. Connect an oscilloscope between ②④ pin of IC409 and ground.</li> <li>4. Adjust SHUE so that <math>V_{cy} = V_{Mg}</math> in the waveform levels.</li> <li>5. Write the data to memory.</li> </ol>	NTSC Colour Bar pattern Oscilloscope	IC409 ②④ pin (B(3/4) Board)	SCD SHUE : $V_{cy} = V_{Mg}$	<p style="text-align: center;">(PIP MODE) &lt; IC409 ②④ pin &gt;</p> <p style="text-align: center;">31.75 μsec</p>
<b>SUB CONTRAST (SCON) ADJUSTMENT</b>				
(PIP MODE) <ol style="list-style-type: none"> <li>1. Input the PAL Colour Bar signal.</li> <li>2. Select PIP on screen mode and put the set into service mode.</li> <li>3. Connect an oscilloscope Q1 emitter on the B(1/4) board and ground.</li> <li>4. Adjust SCON so that <math>V_{MAIN-Y} = V_{PIP-Y}</math> in the waveform levels.</li> <li>5. Write the data to memory.</li> </ol>	PAL Colour Bar pattern Oscilloscope	Q1 emitter (B(1/4) Board)	PIP SCON: $V_{MAIN-Y} = V_{PIP-Y}$	<p style="text-align: center;">(PIP MODE) &lt; B(1/4) board - Q1 emitter &gt;</p> <p style="text-align: center;">31.75 μsec</p>

ADJUSTMENT ITEM AND PROCEDURE	EQUIPMENT AND SIGNAL	MEASUREMENT POSITION	ADJUSTMENT LOCATION	ILLUSTRATION AND SHAPE AND NUMBER
<b>SUB WHITE BALANCE ADJUSTMENT</b> (PIP MODE) 1. Input Gray Scale signal 20 IRE. 2. Select PIP in screen mode and put the set into service mode. 3. Connect an oscilloscope Q2 emitter on the B(1/4) board and ground. 4. Adjust RV1 so that V main = Vpip in the waveform levels. 5. Connect an oscilloscope Q7 emitter on the B(1/4) board and ground. 6. Adjust RV2 so that V main = Vpip in the waveform levels.	Oscilloscope	[ B(1/4) Board ] Q2 emitter (R-Y) Q7 emitter (B-Y)	[ B(1/4) Board ] RV1 (R-Y) RV2 (B-Y)	<p>&lt; Q2 emitter, Q7 emitter &gt;</p>
<b>P IN P POSITION ADJUSTMENT</b> 1. Upon receiving the Monoscope signal. 2. Set service mode and then press the PIP command twice. The P in P positon will then move periodically to four points. Adjust " RDV " and " RDH " on the new screen so that the four points are distributed equally at ; up, down, left and right. 3. Write the data to memory.	Monoscope pattern		< PIP MENU > RDV RDH	
<b>TEXT POSITION ADJUSTMENT</b> 1. Receive the RF signal with TEXT. 2. Set to service mode. 3. Set the TEXT in MIX mode and adjust the screen positon with " TXH " and " TXV ". 4. Write the data to memory.			< TXT MENU > TXH (H position) TXV (V position)	
<b>OSD POSITION ADJUSTMENT</b> 1. Receive the PAL Colour Bar signal. 2. Set to service mode. 3. Adjust " OSH " so that the center line of the signal and the center of the crosshairs of the OSD display match are aligned with each other. 4. Write the data to memory.	PAL Colour Bar pattern		< CPU MENU > OSH	

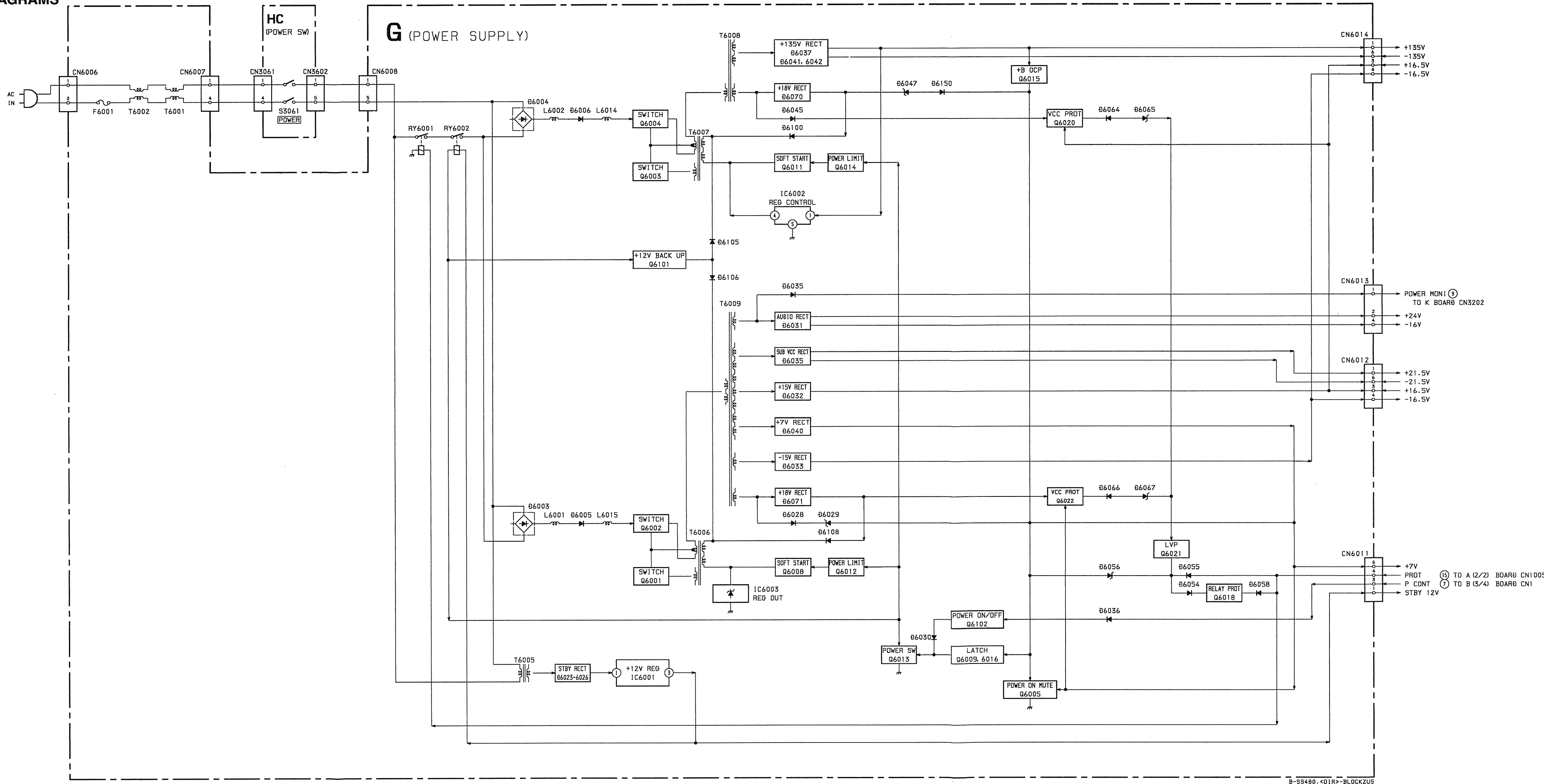


ADJUSTMENT ITEM AND PROCEDURE	EQUIPMENT AND SIGNAL	MEASUREMENT POSITION	ADJUSTMENT LOCATION	ILLUSTRATION AND SHAPE AND NUMBER
<b>B2 BOARD ADJUSTMENT</b> <b>SECAM FILTER ADJUSTMENT</b> 1. Receive the SECAM Colour Bar signal. 2. Adjust BELL filter by rotating L3503 so that ⑮ pin IC3502 should be flat/smooth chroma signal. 3. Adjust B-Y filter by rotating L3505 so that Q3508 emitter (R-Y out) should getsymmetrical transient between (R-Y)>(B-Y) and (B-Y)>(R-Y).	SECAM Colour Bar pattern	IC3502 ⑮ pin  Q3508 emitter	L3503  L3505	<p>&lt; IC3502 ⑮ pin waveform &gt;</p> <p>BAD </p> <p>↓</p> <p>GOOD </p> <p>↑</p> <p>BAD </p> <p>&lt; Q3508 emitter waveform &gt;</p> <p>BAD </p> <p>↓</p> <p>GOOD </p> <p>↑</p> <p>BAD </p>
<b>H. FREQUENCY ADJUSTMENT</b> 1. Connect a frequency counter to ⑫ pin of IC3501. 2. Adjust RV3501 so that the frequency counter is 15.625KHz ± 50Hz. 3. Input a SECAM Colour Bar signal/p. 4. Confirm that ⑫ pin of IC3501 should be 15.625KHz ± 50Hz.	SECAM Colour Bar pattern	RV3501	IC3501 ⑫ pin	

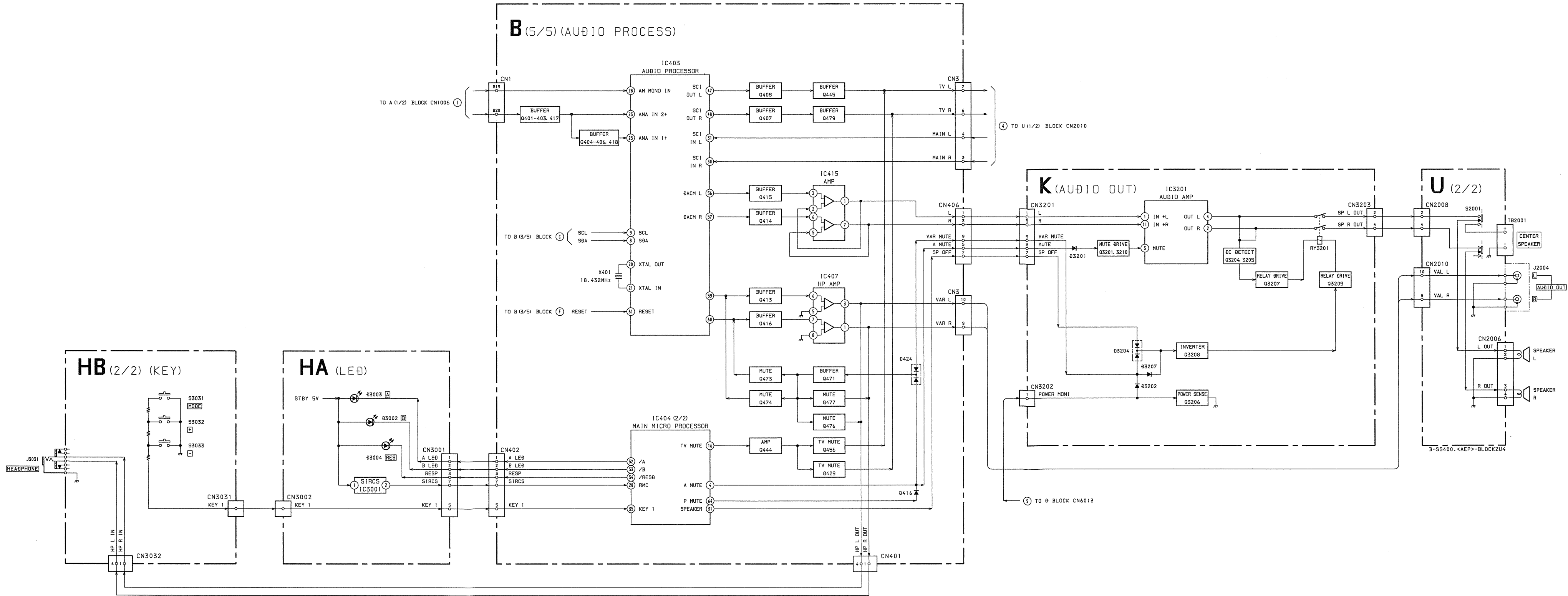
ADJUSTMENT ITEM AND PROCEDURE	EQUIPMENT AND SIGNAL	MEASUREMENT POSITION	ADJUSTMENT LOCATION	ILLUSTRATION AND SHAPE AND NUMBER
<b>A BOARD ADJUSTMENT</b>				
<b>V BLANKING SIZE ADJUSTMENT</b> 1. Receive PAL monoscope signal. 2. Select "BKU" in D/A menu. 3. Reduce the data value by pressing [3] and [6] on the commander to adjust blanking size and minimize the shear on the screen top. 4. Select "BKD" in D/A menu. 5. Increase the data value by pressing [3] and [6] on the commander to adjust blanking size and minimize the shear on the screen bottom.	PAL Monoscope pattern			
<b>H SIZE ADJUSTMENT</b> 1. Receive a PAL monoscope signal. 2. Set to Service Mode. 3. Select H SIZE of VSP menu with the commander buttons [1] and [4]. 4. Adjust to $15.4 \pm 0.2$ square with [3] and [6].	PAL Monoscope pattern			
<b>S CORRECTION ADJUSTMENT</b> 1. Receive a PAL monoscope signal. 2. Set to Service Mode. 3. Select VSCO of VSP menu with the commander buttons [1] and [4]. 4. Adjust to data "00" with [3] and [6].	PAL Monoscope pattern			
<b>V SIZE ADJUSTMENT</b> 1. Receive a PAL monoscope signal. 2. Set to Service Mode. 3. Select V SIZE of VSP menu with the commander buttons [1] and [4]. 4. Adjust to $11.6 \pm 0.2$ square with [3] and [6].	PAL Monoscope pattern			

# SECTION 6 DIAGRAMS

6-1. BLOCK DIAGRAM (1)



BLOCK DIAGRAM (2)



**B (4/5) (TWIN-PICTURE, FLICKER-FREE)**  
 (COM, OSB, NICAM, CHROMA DECODER)

**A (2/2) (H/V DEFLECTION)**

**C (H/V SUB DEFLECTION)**

**D (H/V SUB DEFLECTION)**

**E (HV-REGULATOR (DYNAMIC FOCUS))**

**ZR (VM OUT)**

**ZG (VM OUT)**

**ZB (VM OUT)**

**FOCUS BLOCK**

**HV BLOCK**

**TO CB BLOCK CN7305**

**TO HV BLOCK**

**TO FOCUS BLOCK**

**TO CB BLOCK**

**TO E BOARD**

**TO F BOARD**

**TO G BOARD**

**TO H BOARD**

**TO I BOARD**

**TO J BOARD**

**TO K BOARD**

**TO L BOARD**

**TO M BOARD**

**TO N BOARD**

**TO O BOARD**

**TO P BOARD**

**TO Q BOARD**

**TO R BOARD**

**TO S BOARD**

**TO T BOARD**

**TO U BOARD**

**TO V BOARD**

**TO W BOARD**

**TO X BOARD**

**TO Y BOARD**

**TO Z BOARD**

**TO AA BOARD**

**TO AB BOARD**

**TO AC BOARD**

**TO AD BOARD**

**TO AE BOARD**

**TO AF BOARD**

**TO AG BOARD**

**TO AH BOARD**

**TO AI BOARD**

**TO AJ BOARD**

**TO AK BOARD**

**TO AL BOARD**

**TO AM BOARD**

**TO AN BOARD**

**TO AO BOARD**

**TO AP BOARD**

**TO AQ BOARD**

**TO AR BOARD**

**TO AS BOARD**

**TO AT BOARD**

**TO AU BOARD**

**TO AV BOARD**

**TO AW BOARD**

**TO AX BOARD**

**TO AY BOARD**

**TO AZ BOARD**

**TO BA BOARD**

**TO BB BOARD**

**TO BC BOARD**

**TO BD BOARD**

**TO BE BOARD**

**TO BF BOARD**

**TO BG BOARD**

**TO BH BOARD**

**TO BI BOARD**

**TO BJ BOARD**

**TO BK BOARD**

**TO BL BOARD**

**TO BM BOARD**

**TO BN BOARD**

**TO BO BOARD**

**TO BP BOARD**

**TO BQ BOARD**

**TO BR BOARD**

**TO BS BOARD**

**TO BT BOARD**

**TO BU BOARD**

**TO BV BOARD**

**TO BW BOARD**

**TO BX BOARD**

**TO BY BOARD**

**TO BZ BOARD**

**TO CA BOARD**

**TO CB BOARD**

**TO CC BOARD**

**TO CD BOARD**

**TO CE BOARD**

**TO CF BOARD**

**TO CG BOARD**

**TO CH BOARD**

**TO CI BOARD**

**TO CJ BOARD**

**TO CK BOARD**

**TO CL BOARD**

**TO CM BOARD**

**TO CN BOARD**

**TO CO BOARD**

**TO CP BOARD**

**TO CQ BOARD**

**TO CR BOARD**

**TO CS BOARD**

**TO CT BOARD**

**TO CU BOARD**

**TO CV BOARD**

**TO CW BOARD**

**TO CX BOARD**

**TO CY BOARD**

**TO CZ BOARD**

**TO DA BOARD**

**TO DB BOARD**

**TO DC BOARD**

**TO DD BOARD**

**TO DE BOARD**

**TO DF BOARD**

**TO DG BOARD**

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**TO DJ BOARD**

**TO DK BOARD**

**TO DL BOARD**

**TO DM BOARD**

**TO DN BOARD**

**TO DO BOARD**

**TO DP BOARD**

**TO DQ BOARD**

**TO DR BOARD**

**TO DS BOARD**

**TO DT BOARD**

**TO DU BOARD**

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**TO EI BOARD**

**TO EJ BOARD**

**TO EK BOARD**

**TO EL BOARD**

**TO EM BOARD**

**TO EN BOARD**

**TO EO BOARD**

**TO EP BOARD**

**TO EQ BOARD**

**TO ER BOARD**

**TO ES BOARD**

**TO ET BOARD**

**TO EU BOARD**

**TO EV BOARD**

**TO EW BOARD**

**TO EX BOARD**

**TO EY BOARD**

**TO EZ BOARD**

**TO FA BOARD**

**TO FB BOARD**

**TO FC BOARD**

**TO FD BOARD**

**TO FE BOARD**

**TO FF BOARD**

**TO FG BOARD**

**TO FH BOARD**

**TO FI BOARD**

**TO FJ BOARD**

**TO FK BOARD**

**TO FL BOARD**

**TO FM BOARD**

**TO FN BOARD**

**TO FO BOARD**

**TO FP BOARD**

**TO FQ BOARD**

**TO FR BOARD**

**TO FS BOARD**

**TO FT BOARD**

**TO FU BOARD**

**TO FV BOARD**

**TO FW BOARD**

**TO FX BOARD**

**TO FY BOARD**

**TO FZ BOARD**

**TO GA BOARD**

**TO GB BOARD**

**TO GC BOARD**

**TO GD BOARD**

**TO GE BOARD**

**TO GF BOARD**

**TO GG BOARD**

**TO GH BOARD**

**TO GI BOARD**

**TO GJ BOARD**

**TO GK BOARD**

**TO GL BOARD**

**TO GM BOARD**

**TO GN BOARD**

**TO GO BOARD**

**TO GP BOARD**

**TO GQ BOARD**

**TO GR BOARD**

**TO GS BOARD**

**TO GT BOARD**

**TO GU BOARD**

**TO GV BOARD**

**TO GW BOARD**

**TO GX BOARD**

**TO GY BOARD**

**TO GZ BOARD**

**TO HA BOARD**

**TO HB BOARD**

**TO HC BOARD**

**TO HD BOARD**

**TO HE BOARD**

**TO HF BOARD**

**TO HG BOARD**

**TO HH BOARD**

**TO HI BOARD**

**TO HJ BOARD**

**TO HK BOARD**

**TO HL BOARD**

**TO HM BOARD**

**TO HN BOARD**

**TO HO BOARD**

**TO HP BOARD**

**TO HQ BOARD**

**TO HS BOARD**

**TO HT BOARD**

**TO HU BOARD**

**TO HV BOARD**

**TO HW BOARD**

**TO HX BOARD**

**TO HY BOARD**

**TO HZ BOARD**

**TO IA BOARD**

**TO IB BOARD**

**TO IC BOARD**

**TO ID BOARD**

**TO IE BOARD**

**TO IF BOARD**

**TO IG BOARD**

**TO IH BOARD**

**TO II BOARD**

**TO IJ BOARD**

**TO IK BOARD**

**TO IL BOARD**

**TO IM BOARD**

**TO IN BOARD**

**TO IO BOARD**

**TO IP BOARD**

**TO IQ BOARD**

**TO IR BOARD**

**TO IS BOARD**

**TO IT BOARD**

**TO IU BOARD**

**TO IV BOARD**

**TO IW BOARD**

**TO IX BOARD**

**TO IY BOARD**

**TO IZ BOARD**

**TO JA BOARD**

**TO JB BOARD**

**TO JC BOARD**

**TO JD BOARD**

**TO JE BOARD**

**TO JF BOARD**

**TO JG BOARD**

**TO JH BOARD**

**TO JI BOARD**

**TO JJ BOARD**

**TO JK BOARD**

**TO JL BOARD**

**TO JM BOARD**

**TO JN BOARD**

**TO JO BOARD**

**TO JP BOARD**

**TO JQ BOARD**

**TO JR BOARD**

**TO JS BOARD**

**TO JT BOARD**

**TO JU BOARD**

**TO JV BOARD**

**TO JW BOARD**

**TO JX BOARD**

**TO JY BOARD**

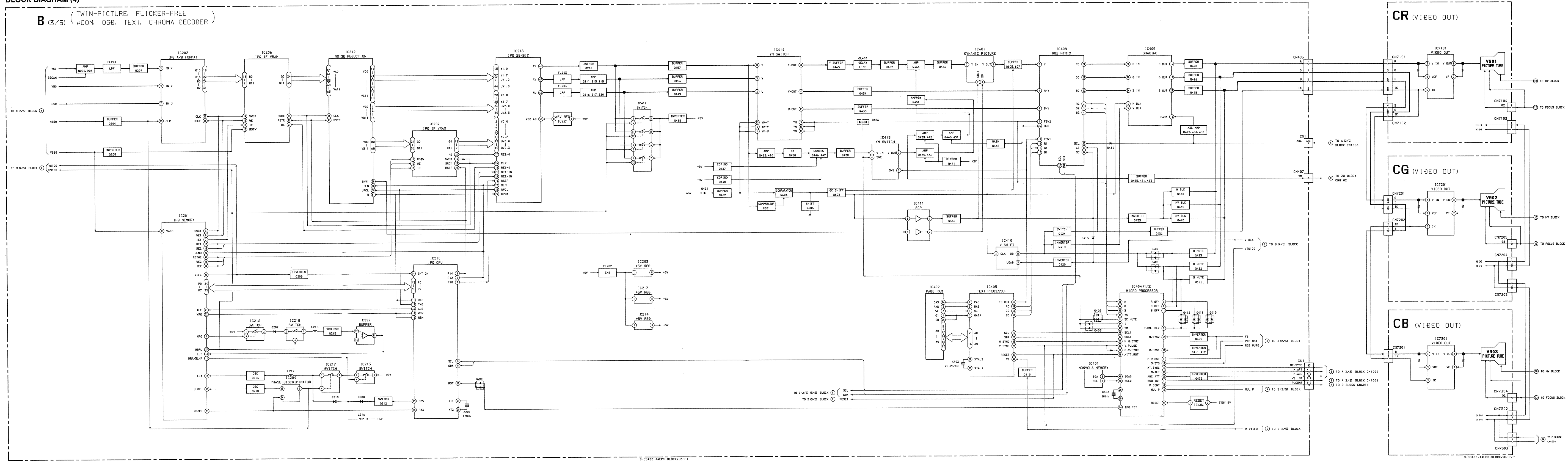
**TO JZ BOARD**

**TO KA BOARD**

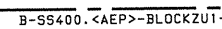
**TO KB BOARD**

**BLOCK DIAGRAM (4)**

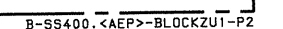
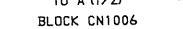
**B** (3/5) (TWIN-PICTURE, FLICKER-FREE  
μCOM, OSD, TEXT, CHROMA DECODER)



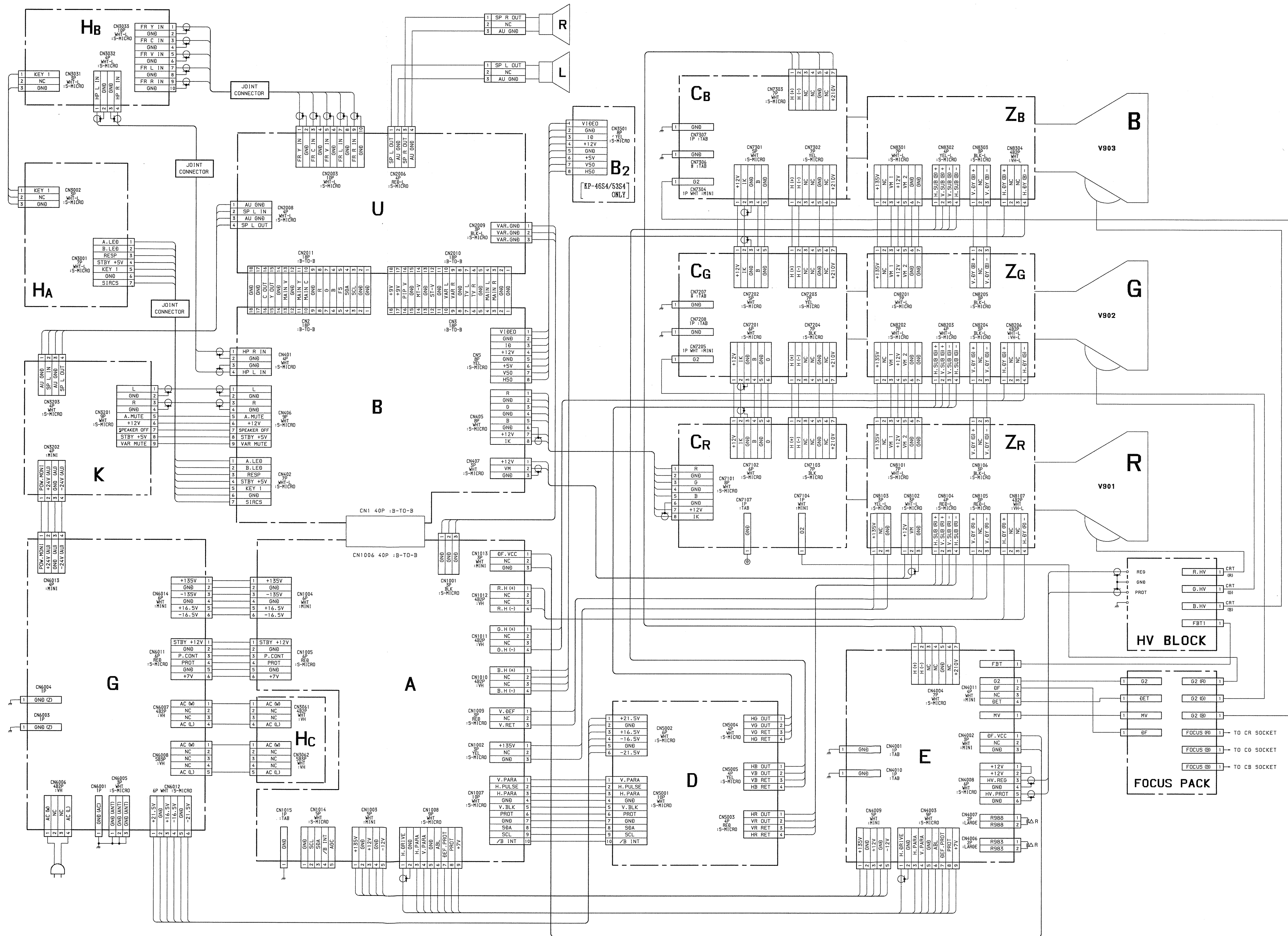
**A**<sub>(1/2)</sub> (TUNER, IF)



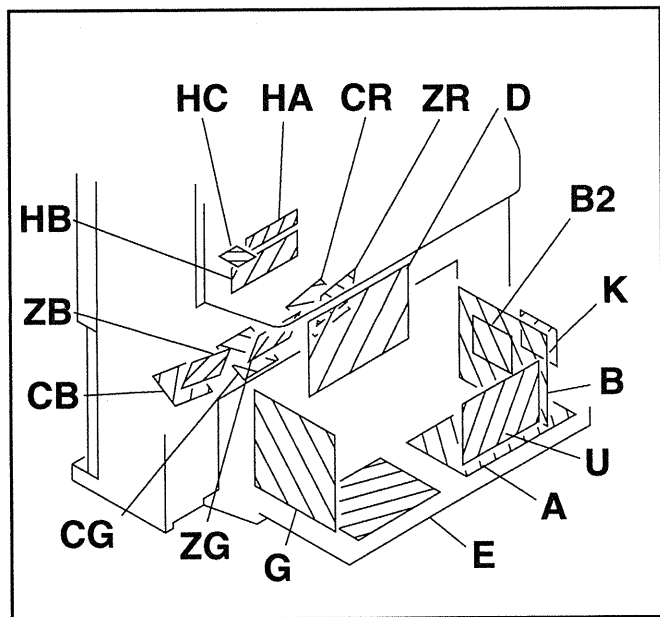
CN2  
MAIN Y







6-3. CIRCUIT BOARDS LOCATION



6-4. PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS

- Note:
- Capacitors without voltage indication are all 50V.
  - All capacitors are in  $\mu\text{F}$  unless otherwise noted.
  - All resistors are in ohms.
  - $k\Omega=1000\Omega$ ,  $M\Omega=1000k\Omega$ .
  - Indication of resistance, which does not have one for rating electrical power, is as follows.
    - Pitch: 5mm
    - Rating electrical power:  $1/4W$
  - $1/4W$  in resistance,  $1/2W$  and  $1/8W$  in chip resistance.
  - : nonflammable resistor.
  - : fusible resistor.
  - $\Delta$ : internal component.
  - All variable and adjustable resistors have characteristic curve B, unless otherwise noted.
  - : earth-chassis.
  - The components identified by in this basic schematic diagram have been carefully factory-selected for each set in order to satisfy regulations regarding X-ray radiation. Should replacement be required, replace only with the value originally used.
  - When replacing components identified by make the necessary adjustments indicated. If results do not meet the specified value, change the component identified by and repeat the adjustment until the specified value is achieved. (Refer to R988, R983 adjustment on Page 40-43.)

Part replaced (  )	Adjustment (  )
C4057, D4026, R988, R4019, T4002, T4003 (FBT), E BOARD, HV BLOCK	HOLD-DOWN (R988)
C4033, C4034, C4046, C4047, C4049, D4012, D4018, D4023, D4028, D4035, R983, R4022, R4046, R4047, R4048, R4053, R4054, R4057, R4059, R4060, R4061, R4077, R4079, R4086, R4087, R4088, R4091, R4092, R4097, R4098, R4100, C4013, T4002, T4003 (FBT), E Board, HV Block	HOLD-DOWN (R983)

- When replacing the part in below table, be sure to perform the related adjustment.
- Readings are taken with a color-bar signal input.
  - no mark: PAL
  - ( ) : SECAM
  - ( ) : NTSC 3.58
- Readings are taken with a 10M $\Omega$  digital multimeter.
- Voltages are dc with respect to ground unless otherwise noted.
- Voltage variations may be noted due to normal production tolerances.
- All voltages are in V.
- \*: Measurement impossibility.

- : B-line.
- : B-line.
- (Actual measured value may be different).
- : signal path.
- Circled numbers are waveform references.

Reference information

RESISTOR	: RN	METAL FILM
	: RC	SOLID
	: FPRD	NONFLAMMABLE CARBON
	: FUSE	NONFLAMMABLE FUSIBLE
	: RW	NONFLAMMABLE WIREWOUND
	: RS	NONFLAMMABLE METAL OXIDE
	: RB	NONFLAMMABLE CEMENT
	: *	ADJUSTMENT RESISTOR
COIL	: LF-SL	MICRO INDUCTOR
CAPACITOR	: TA	TANTALUM
	: PS	STYROL
	: PP	POLYPROPYLENE
	: PT	MYLAR
	: MPS	METALIZED POLYESTER
	: MPP	METALIZED POLYPROPYLENE
	: ALB	BIPOLAR
	: ALT	HIGH TEMPERATURE
	: ALR	HIGH RIPPLE

Note: The components identified by shading and mark are critical for safety. Replace only with part number specified.

Note: The symbol display is on the component side.

The components identified by shading and mark are critical for safety. Replace only with part number specified.

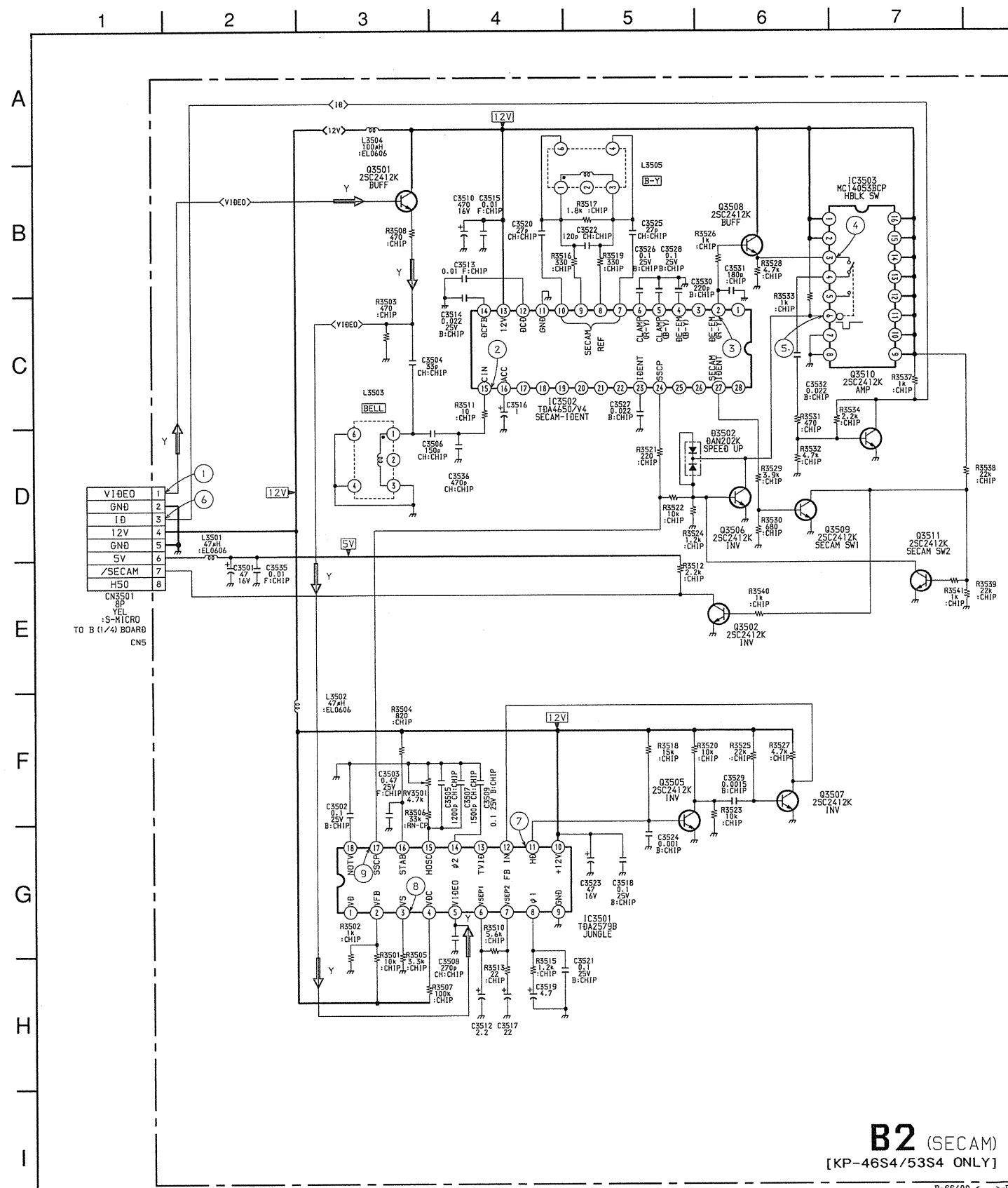
The symbol indicate fast operating fuse. Replace only with fuse of same rating as marked.

Terminal name of semiconductors in silk screen printed circuit ( \* )

Device	Printed symbol	Terminal name	Circuit
① Transistor		Collector Base Emitter	
② Transistor		Collector Base Emitter	
③ Diode		Cathode Anode (NC)	
④ Diode		Cathode Anode (NC)	
⑤ Diode		Common Anode Cathode	
⑥ Diode		Common Anode Cathode	
⑦ Diode		Common Anode Cathode	
⑧ Diode		Common Anode Cathode	
⑨ Diode		Common Anode Cathode	
⑩ Diode		Common Anode Cathode	
⑪ Diode		Common Anode Cathode	
⑫ Transistor (FET)		Drain Source Gate	
⑬ Transistor (FET)		Drain Source Gate	
⑭ Transistor (FET)		Drain Source Gate	

(Chip semiconductors that are not actually used are included.)

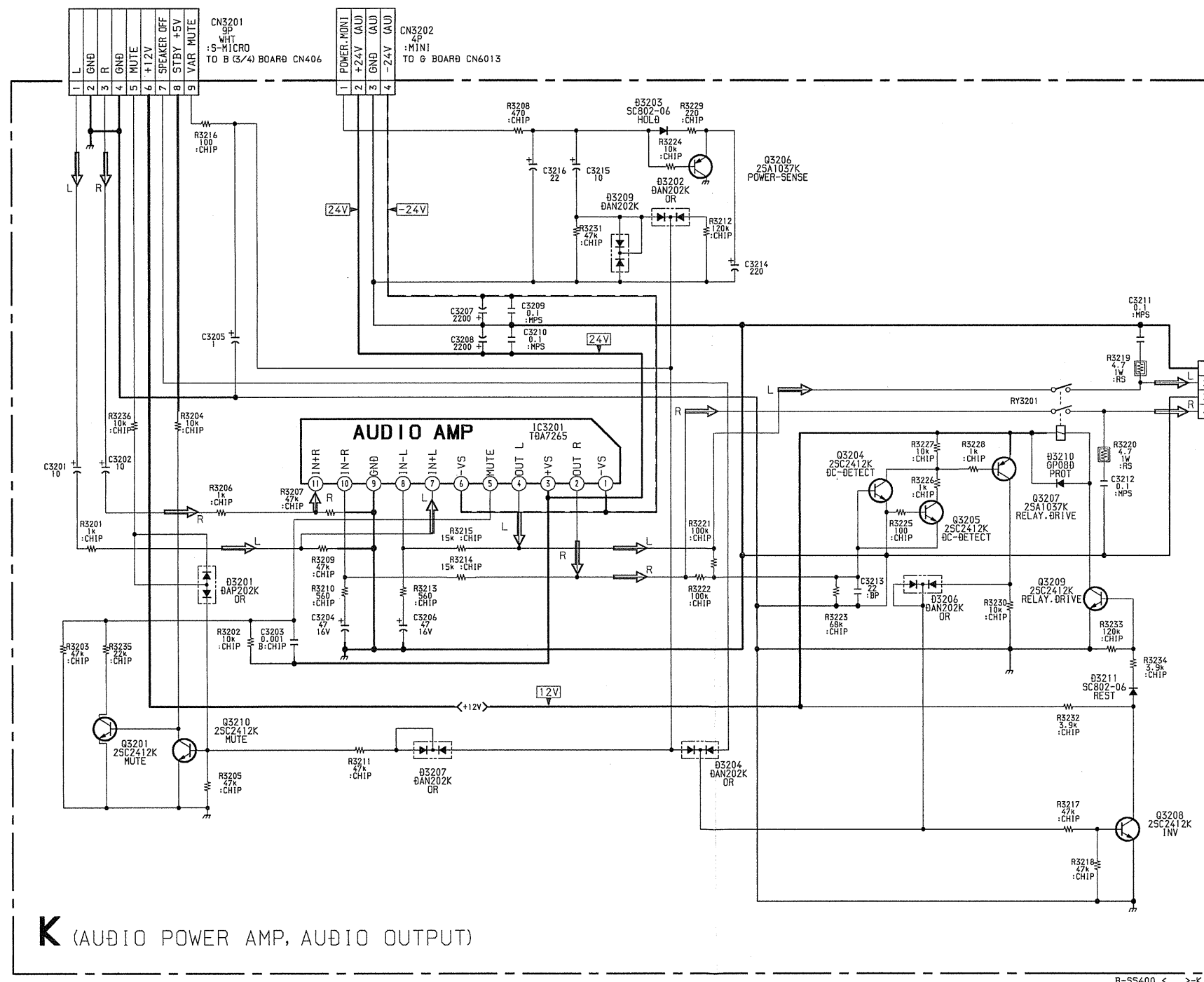




B2 BOARD IC VOLTAGE LIST	
	Pin Voltages
IC3501	1 -
	2 <1.1>
	3 <0.5>
	4 <1.1>
	5 <2.2>
	6 <7.8>
	7 <6.5>
	8 <2.8>
	9 GND
	10 <11.8>
	11 <0.5>
	12 <1.2>
	13 -
	14 <2.5>
IC3502	15 <4.4>
	16 <9.1>
	17 <1.8>
	18 -
	1 <2.7>
	2 -
	3 -
	4 <7.0>
	5 <9.7>
	6 <3.9>
	7 <3.4>
	8 <2.9>
	9 <2.4>
	11 GND
	12 <11.8>
	14 <5.8>
	15 <3.4>
	16 <7.9>
	17 -
18 -	
19 -	
20 -	
21 -	
22 <7.5>	
24 <1.5>	
25 -	
26 -	
27 <5.7>	
IC3503	1 <11.8>
	2 <11.8>
	3 <6.4>
	4 <6.4>
	5 <10.8>
	6 GND
	7 GND
	9 <11.8>
	9 <11.8>
	11 <11.8>
	14 <11.8>
15 <11.8>	
16 <11.8>	

All voltages are in V

- = Blank Pin



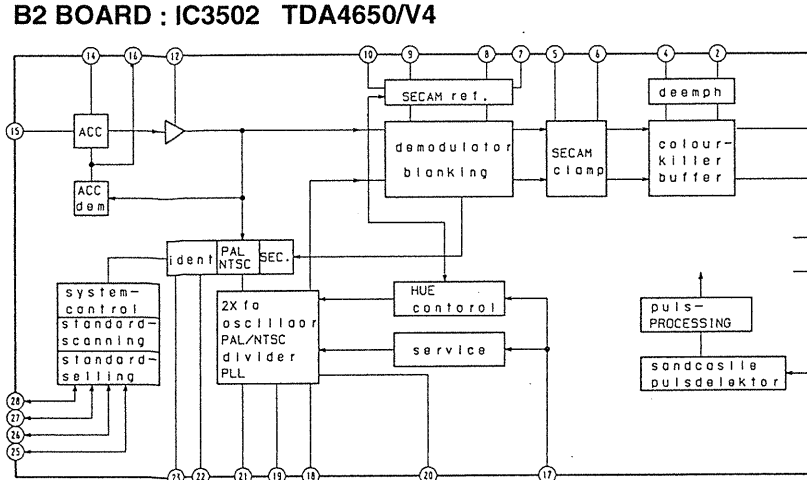
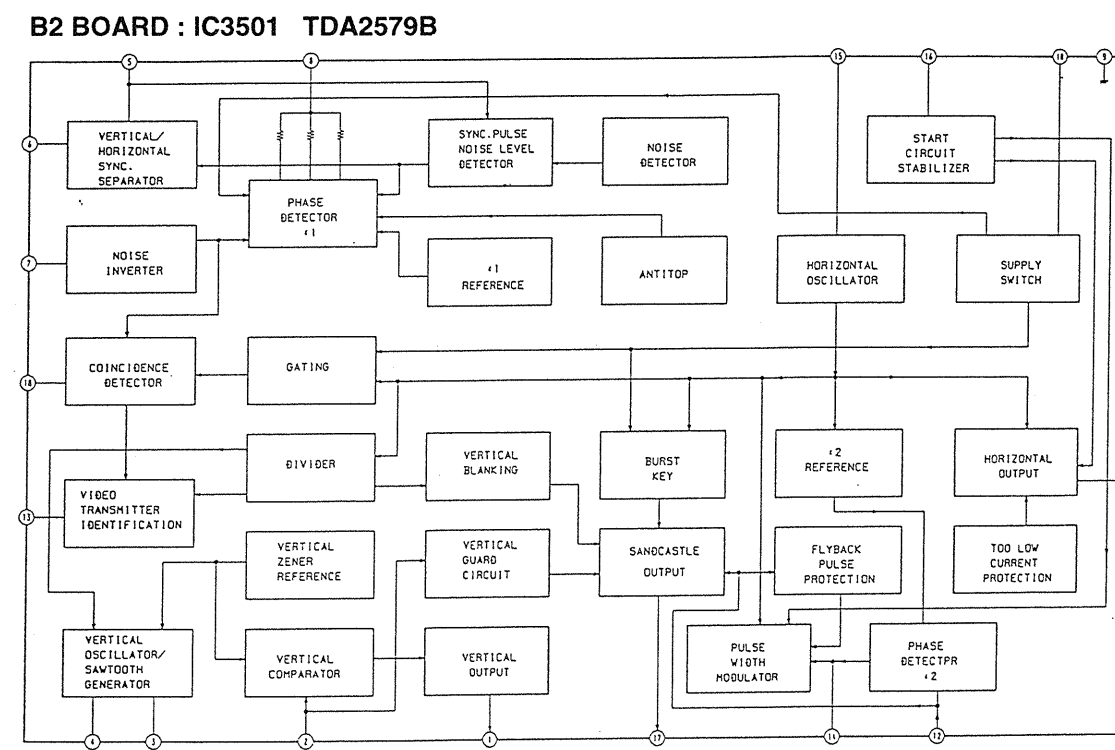
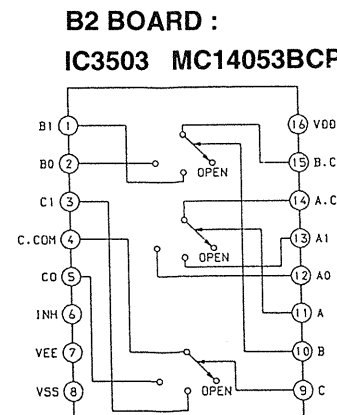
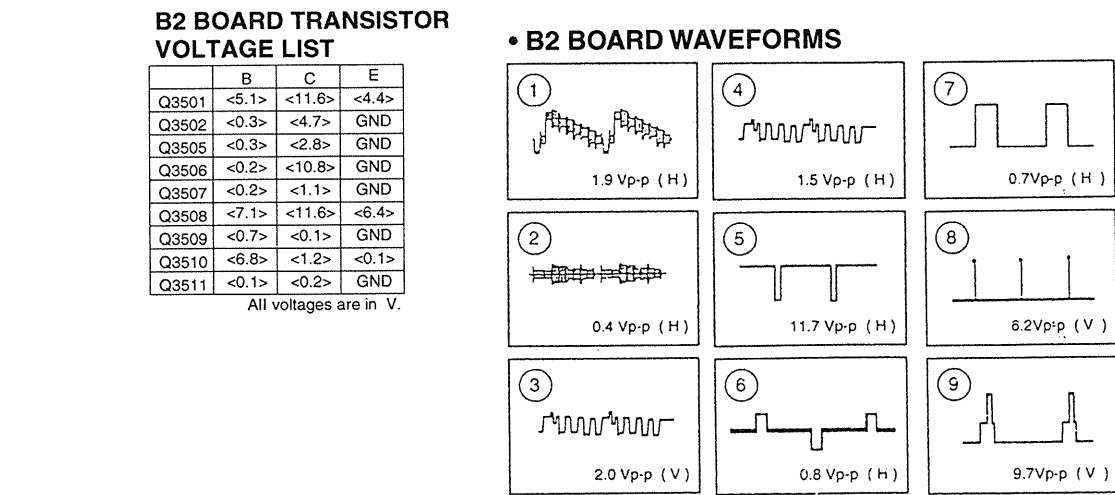
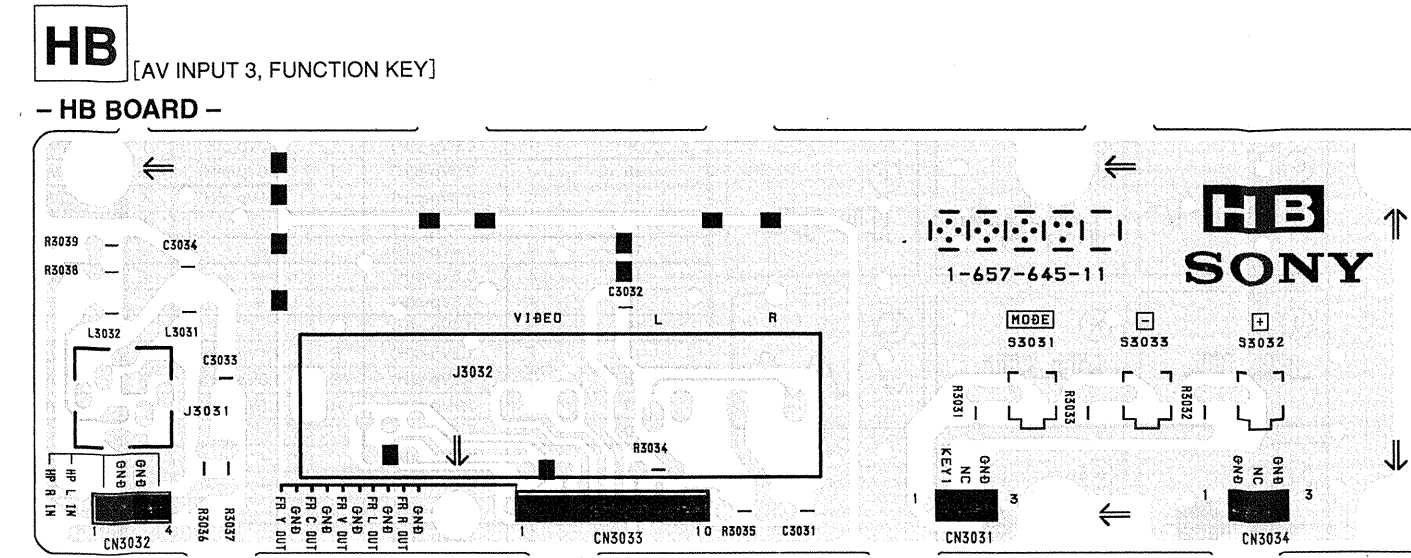
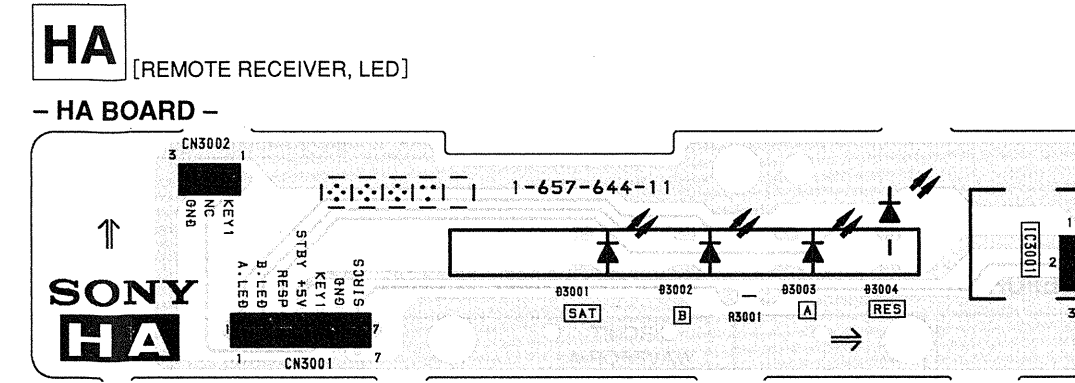
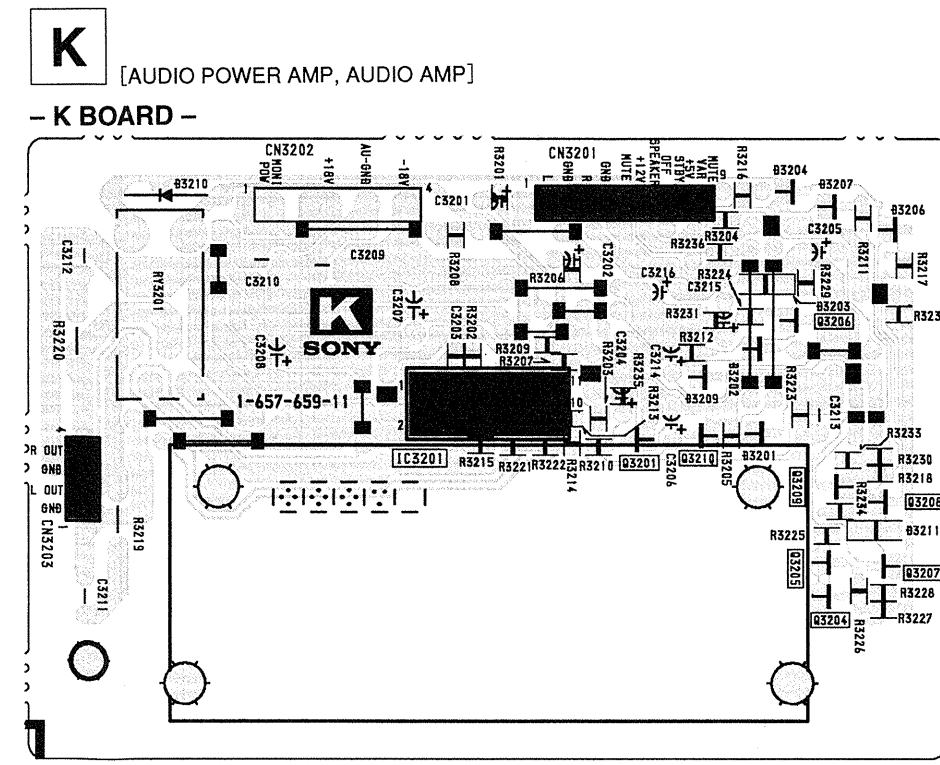
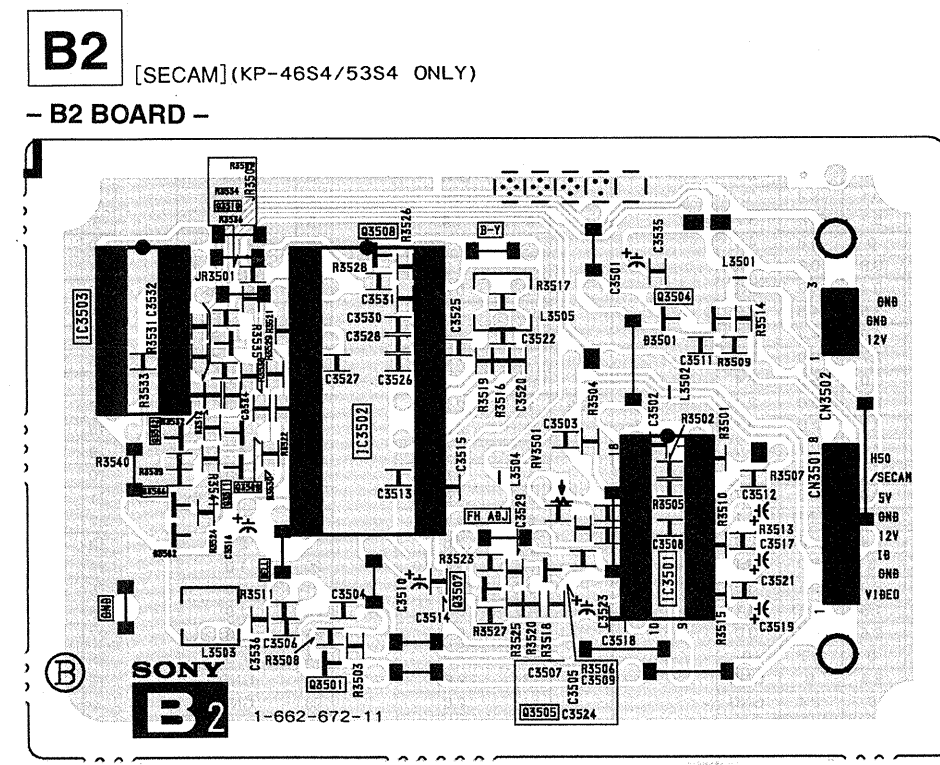
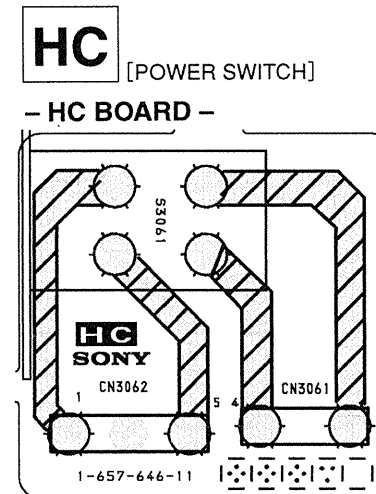
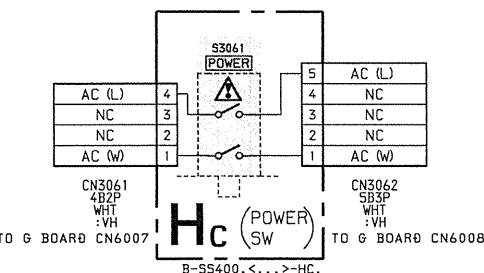
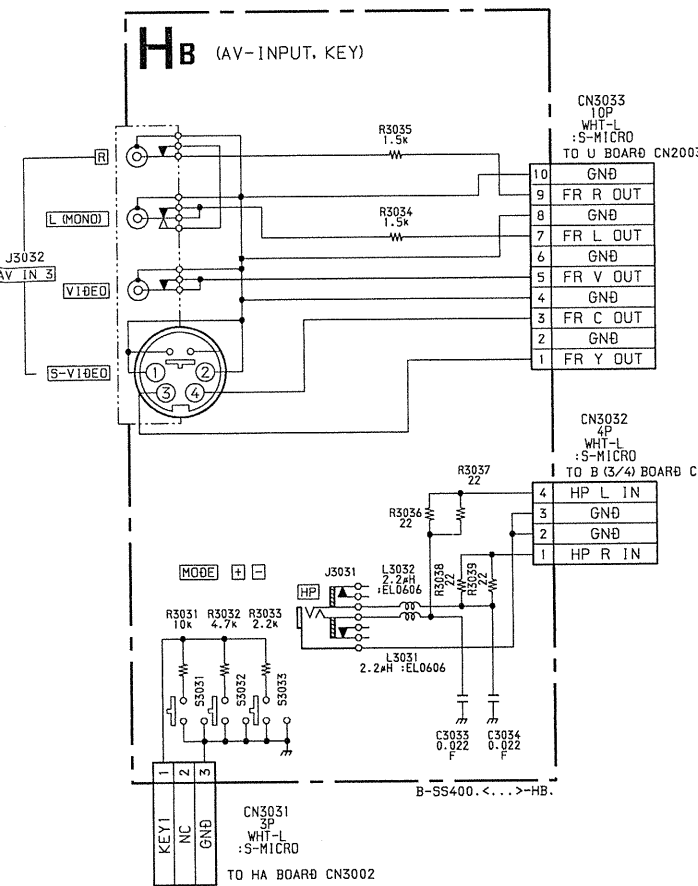
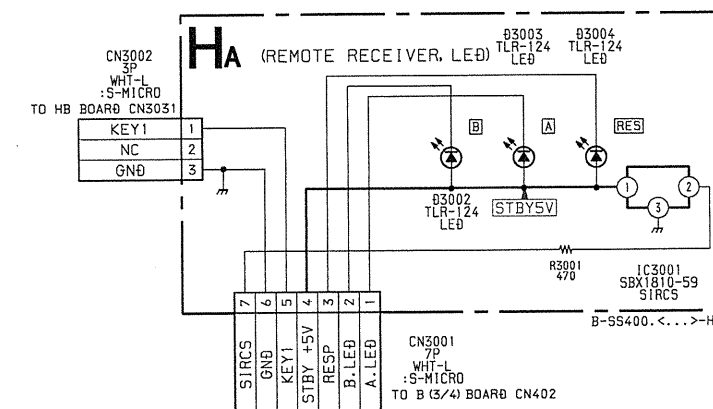
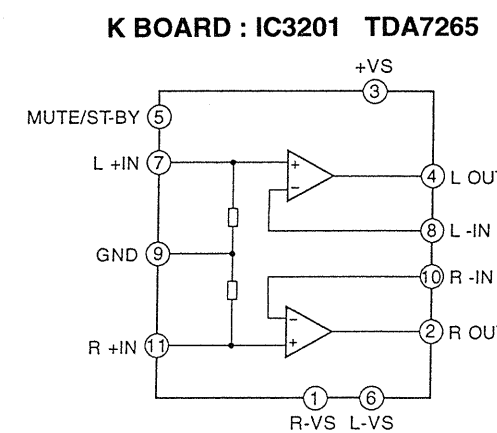
	B	C	E
Q3201	0.8	0.1	GND
Q3204	0	12.4	GND
Q3205	GND	12.3	0
Q3206	12.3	0	12.3
Q3207	12.3	0	12.8
Q3208	0.2	6.6	GND
Q3209	0.7	0.1	GND
Q3210	0	0.8	GND

All voltages are in V.

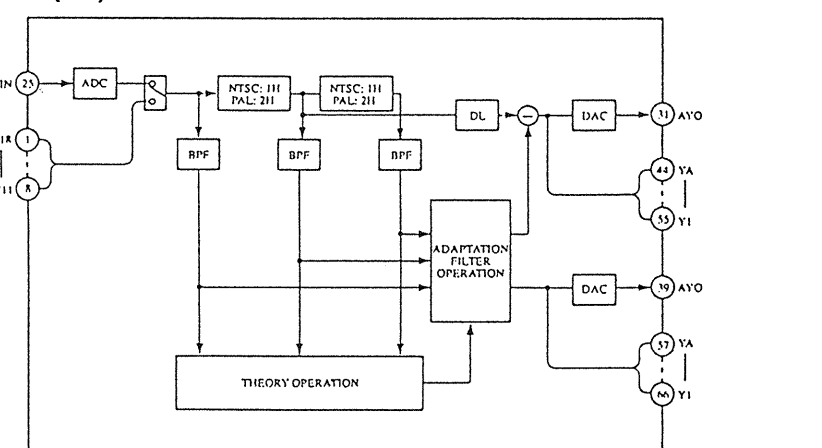
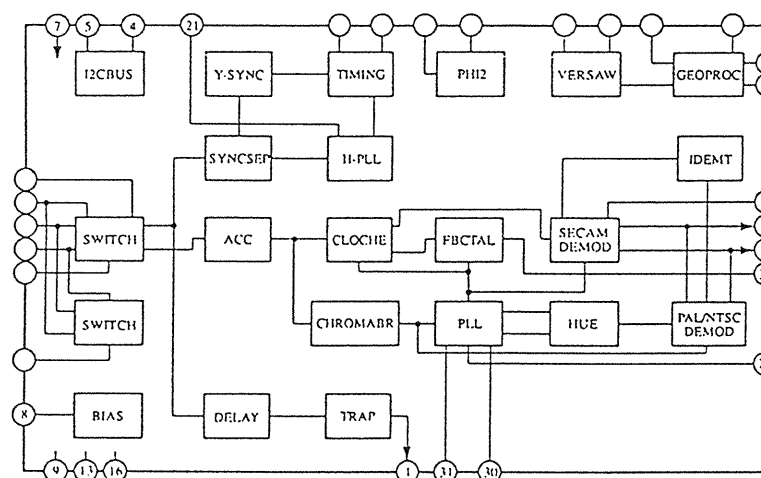
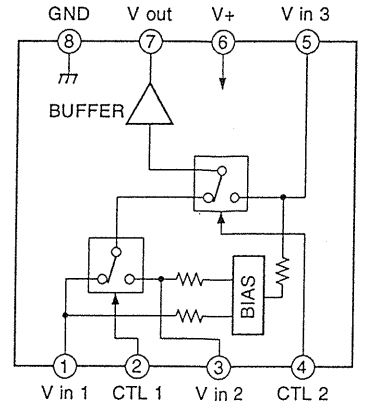
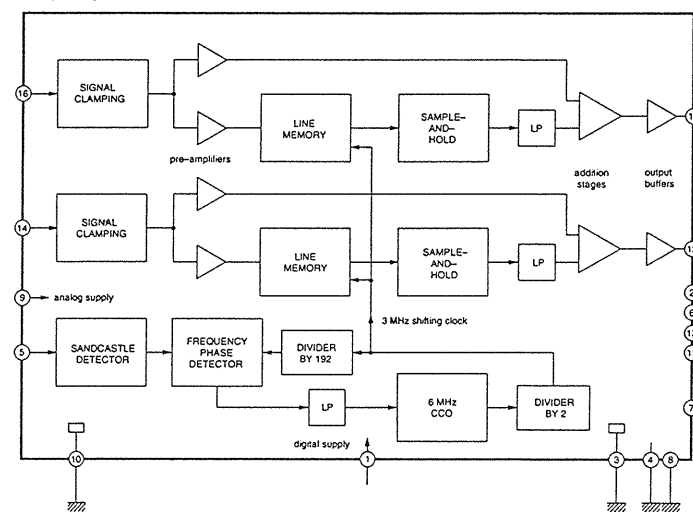
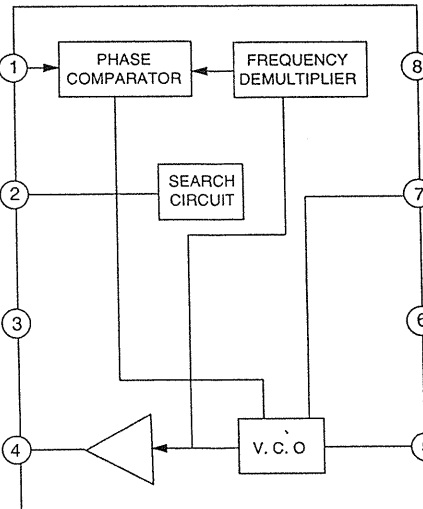
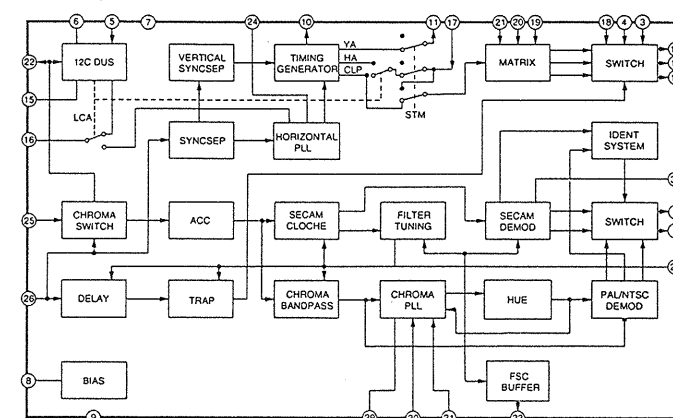
### K BOARD IC VOLTAGE LIST

Pin	Voltages
1	-24.0
2	0
3	24.0
4	0
5	13.8
6	-24.0
7	0
8	0
9	GND
10	0
11	0

All voltages are in V.







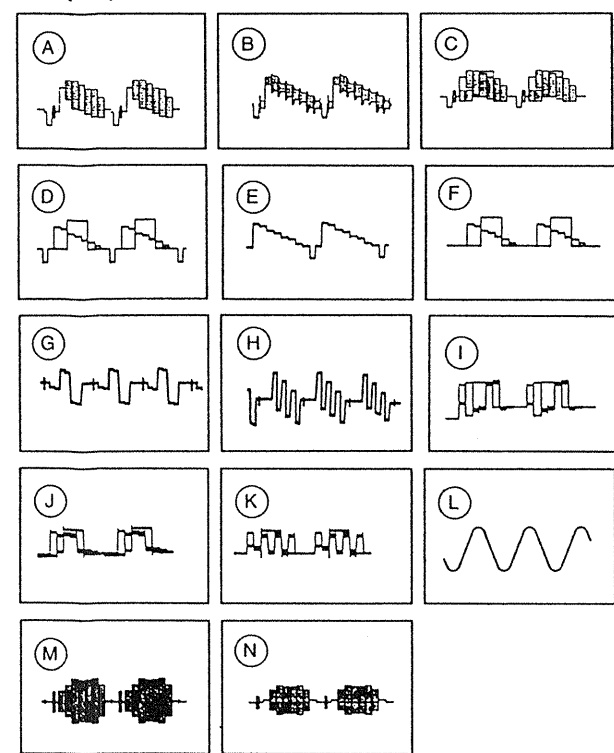
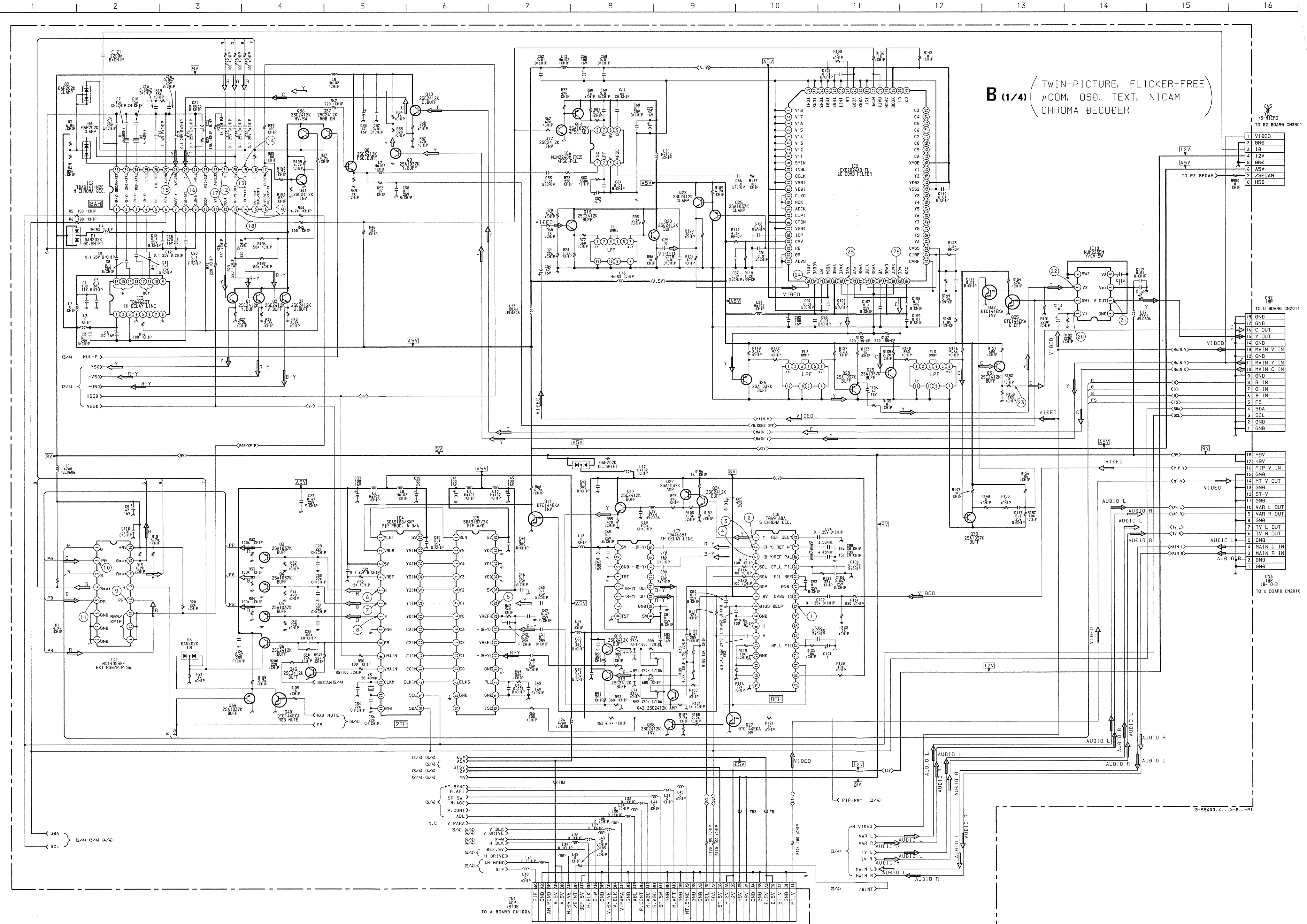
### VOLTAGE LIST

Q1	B	C	E
Q2	2.6	7.6	2.0
Q3	0	GND	0.7
Q4	0	GND	0.7
Q5	0	GND	0.7
Q6	0	4.8	0.7
Q7	2.6	7.6	2.0
Q8	0.1	8.8	0.7
Q9	0.1	8.8	0.7
Q10	0	8.8	4.4
Q11	3.8	0.3	GND
Q12	0.4	4.6	GND
Q13	0.4	4.6	2.0
Q14	4.6	4.4	8.8
Q17	2.7	8.0	2.0
Q18	3.0	8.0	2.4
Q19	3.0	8.0	2.4
Q20	3.1	4.9	2.5
Q22	7.0	2.7	8.0
Q23	1.1	4.8	1.5
Q24	1.1	4.8	1.7
Q25	0.5	GND	2.0
Q26	2.3	GND	3.0
Q27	2.3	GND	3.0
Q29	2.4	GND	3.0
Q30	2.4	GND	3.0
Q31	0	4.7	0
Q32	2.4	0	GND
Q33	2.4	0	GND
Q37	0	7.6	0.7
Q38	0	7.6	0.7
Q39	0.1	4.4	GND
Q40	0	GND	0.7
Q41	0	GND	0.7
Q42	1.6	8.6	1.0
Q43	0	0.6	GND

All voltages are in V.

	Pin	Voltages		Pin	Voltages		Pin	Voltages
IC1	1	0		25	1.3 ~ 1.7	IC9	1	GND

	2	0.8	26	0.8	2	GND
	3	0	27	1.0	3	GND
	4	0.8	28	4.8	4	GND
	5	0.8	29	4.1	5	GND
	6	GND	2	1.0	6	GND
	7	GND	3	0.8	7	GND
	8	GND	4	1.3 ~1.7	8	GND
	9	1.9	5	1.9	9	GND
	10	1.9	6	2.0 (2.5) <1.3	10	GND
	11	1.9	7	1.8 (1.5) <1.3	11	2.3
	12	0.8	8	0.8 <1.3	12	GND
	13	0	9	1.0 <1.8	13	4.8
	14	1.0	10	0.8 <1.6	14	0
	15	1.0	11	1.0 <1.8	15	0
	16	8.8	12	2.5	16	0
	17	2.5	13	GND	17	4.8
	2	2.5	14	—	18	4.8
	3	2.5	15	4.4	19	GND
	4	2.5	16	GND	20	4.8
	5	4.6	17	2.0 (2.5) <1.9	21	0.5
	6	4.7	18	GND	22	0.5
	7	7.6	19	2.6	23	GND
	8	5.0	20	1.0	24	GND
	9	GND	21	2.5	25	1.5
	10	0.7	22	1.9	26	4.8
	11	0.1	23	2.3	27	2.4
	12	3.2	24	4.8	28	4.8
	13	2.5	25	GND	29	4.8
	14	2.6	26	GND	30	GND
	15	0.3	27	GND	31	3.4
	16	0.3	28	4.8	32	3.0
	17	0.3	1	2.4	33	3.0
	18	0.8	2	1.8	34	3.0
	19	4.8	3	GND	35	GND
	20	4.8	4	2.9	36	1.1
	21	4.8	5	3.0	37	4.7
	22	3.2	6	4.8	38	GND
	23	0.1	7	2.4	39	1.5
	24	3.9	1	4.8	40	3.9
	25	0	2	—	41	3.0
	26	3.8	3	GND	42	3.0
	27	4	4	GND	43	GND
	28	3.4	5	0.6	44	—
	29	4.7	6	—	45	—
	30	1.4	7	—	46	—
	31	1.5	8	GND	47	—
	32	0.4	9	4.8	48	—
	2	4.8	10	GND	49	—
	3	2	11	3.1	50	—
	4	GND	12	3.1	51	—
	5	0.7	13	—	52	GND
	6	—	14	1.4	53	4.8
	7	—	15	—	54	—
	8	GND	16	1.4	55	—
	9	4.8	1	2.3	56	4.8
	10	4.8	2	2.2	57	—
	11	3.0	3	2.1	58	—
	12	3.0	4	4.4 (4.6) <4.3	59	—
	13	—	5	4.5 (4.6) <4.3	60	—
	14	1.4	6	0.7	61	—
	15	1.4	7	8.0	62	65
	16	—	8	5.0	63	—
	17	1.4	9	GND	64	—
	18	4.1	10	0.3	65	—
	19	0.3	11	0.3	66	—
	20	0.1	12	3.8	67	—
	21	0.3	13	3.8	67	4.8
	22	1.6	14	1.6	13	0
	23	2.4	22	—	77	GND
	24	GND	23	—	78	GND
	25	4.7	24	—	79	GND
	26	4.7	25	8.0	80	GND
	27	2.5	26	3.3 (3.8)	81	0
	28	1.0 <1.8	27	GND	2	0
	29	1.0 <1.8	28	2.1	70	GND
	30	1.0 <1.6	29	4.3 (4.7) <4.3	4	GND
	31	0.8 <1.3	30	2.1 (2.3) <2.1	5	3.6
	32	1.8 (1.5) <1.3	31	1.7	6	8.9
	33	2.0 (1.5) <1.3	32	3.8 (0.0) <3.6	7	3.7
	24	1.9			8	GND



CIRCUIT WAVEFORM REFERENCE	PAL	SECAM	NTSC 3.58 4.43
1	A 1.2vp-p(H)	B 1.0vp-p(H)	C 1.1vp-p(H)
2	D 0.6vp-p(H)	E 0.4vp-p(H)	D 0.8vp-p(H)
3	G 0.7vp-p(H)	G 1.2vp-p(H)	G 0.8vp-p(H)
4	H 0.8vp-p(H)	H 1.5vp-p(H)	H 0.7vp-p(H)
5	D 1.2vp-p(H)	E 0.8vp-p(H)	D 0.9vp-p(H)
6	I 0.8vp-p(H)	I 1.0vp-p(H)	I 0.8vp-p(H)
7	J 0.9vp-p(H)	J 1.0vp-p(H)	J 0.7vp-p(H)
8	K 0.9vp-p(H)	K 0.8vp-p(H)	K 0.9vp-p(H)
9	I 0.9vp-p(H)	I 0.9vp-p(H)	I 0.7vp-p(H)
10	J 0.9vp-p(H)	J 0.9vp-p(H)	J 0.7vp-p(H)
11	K 0.8vp-p(H)	K 0.8vp-p(H)	K 0.8vp-p(H)
12	I 0.8vp-p(H)	—	I 0.8vp-p(H)
13	J 0.8vp-p(H)	—	J 0.8vp-p(H)
14	K 0.8vp-p(H)	—	K 0.8vp-p(H)
15	A 2.0vp-p(H)	—	—
16	N 0.9vp-p(H)	—	—
17	F 1.3vp-p(H)	F 1.1vp-p(H)	F 1.1vp-p(H)
18	G 1.2vp-p(H)	G 1.0vp-p(H)	G 1.0vp-p(H)
19	H 1.7vp-p(H)	H 1.5vp-p(H)	H 1.3vp-p(H)
20	C 2.5vp-p(H)	—	—
21	D 2.3vp-p(H)	—	—
22	C 2.3vp-p(H)	—	—
23	M 1.8vp-p(H)	—	—
24	C 1.9vp-p(H)	—	—
25	D 2.7vp-p(H)	—	—
26	N 2.5vp-p(H)	—	—

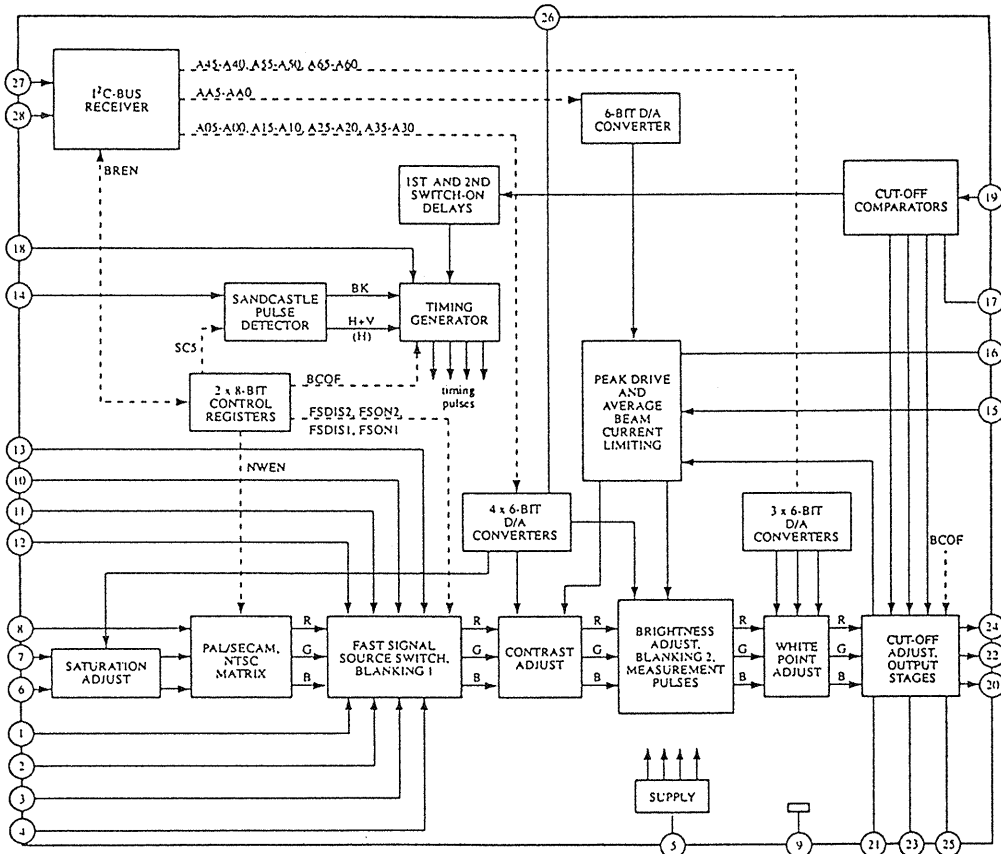
CIRCUIT WAVEFORM REFERENCE	PAL	SECAM	NTSC 3.58 4.43
1	A 1.2vp-p(H)	B 1.0vp-p(H)	C 1.1vp-p(H)
2	D 0.6vp-p(H)	E 0.4vp-p(H)	D 0.8vp-p(H)
3	G 0.7vp-p(H)	G 1.2vp-p(H)	G 0.8vp-p(H)
4	H 0.8vp-p(H)	H 1.5vp-p(H)	H 0.7vp-p(H)
5	D 1.2vp-p(H)	E 0.8vp-p(H)	D 0.9vp-p(H)
6	I 0.8vp-p(H)	I 1.0vp-p(H)	I 0.8vp-p(H)
7	J 0.9vp-p(H)	J 1.0vp-p(H)	J 0.7vp-p(H)
8	K 0.9vp-p(H)	K 0.8vp-p(H)	K 0.9vp-p(H)
9	I 0.9vp-p(H)	I 0.9vp-p(H)	I 0.7vp-p(H)
10	J 0.9vp-p(H)	J 0.9vp-p(H)	J 0.7vp-p(H)
11	K 0.8vp-p(H)	K 0.8vp-p(H)	K 0.8vp-p(H)
12	I 0.8vp-p(H)	—	I 0.8vp-p(H)
13	J 0.8vp-p(H)	—	J 0.8vp-p(H)
14	K 0.8vp-p(H)	—	K 0.8vp-p(H)
15	A 2.0vp-p(H)	—	—
16	N 0.9vp-p(H)	—	—
17	F 1.3vp-p(H)	F 1.1vp-p(H)	F 1.1vp-p(H)
18	G 1.2vp-p(H)	G 1.0vp-p(H)	G 1.0vp-p(H)
19	H 1.7vp-p(H)	H 1.5vp-p(H)	H 1.3vp-p(H)
20	C 2.5vp-p(H)	—	—
21	D 2.3vp-p(H)	—	—
22	C 2.3vp-p(H)	—	—
23	M 1.8vp-p(H)	—	—
24	C 1.9vp-p(H)	—	—
25	D 2.7vp-p(H)	—	—
26	N 2.5vp-p(H)	—	—



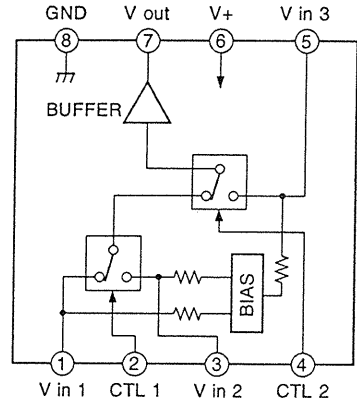




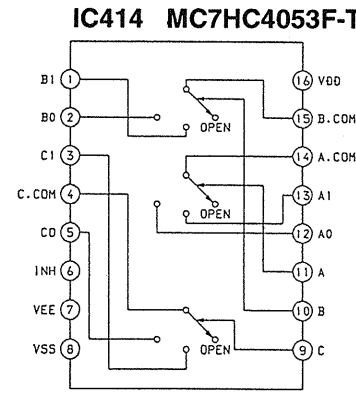
# B (3/4) BOARD : IC408 TDA4780



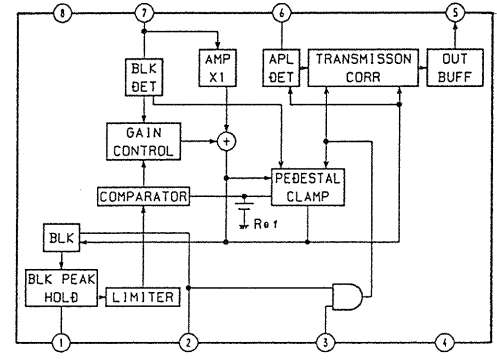
# B (3/4) BOARD : IC413 NJM2234M



# B (3/4) BOARD : IC414 MC7HC4053F-T2



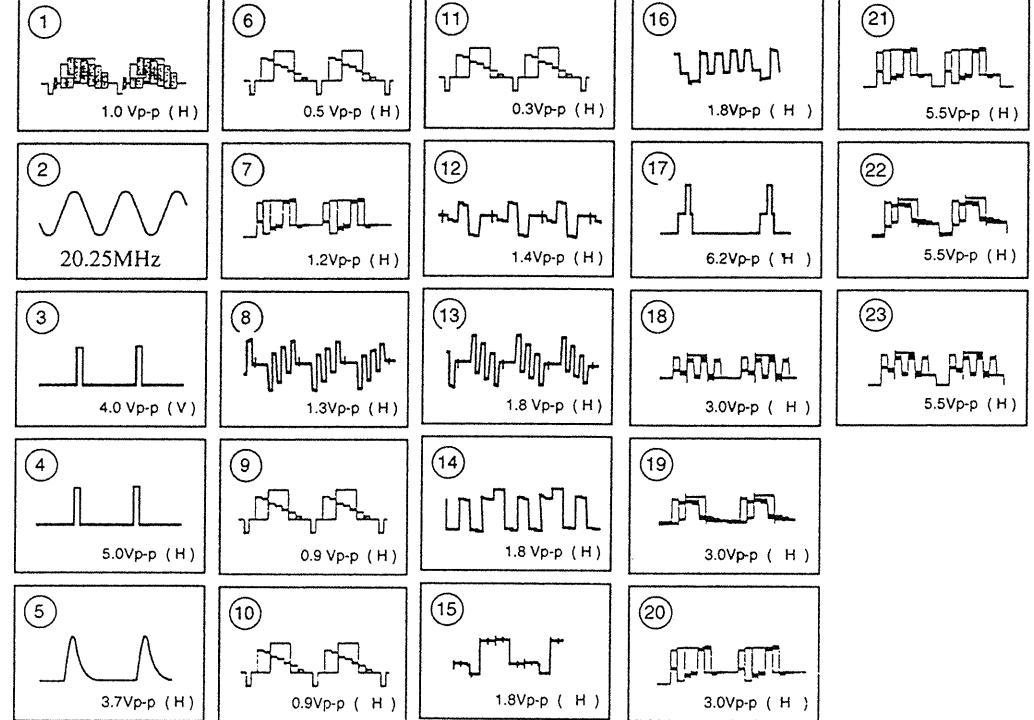
# B (3/4) BOARD : IC601 CX20125



# B (3/4) BOARD \* MARK LIST

IC404	CXP85460-037Q	KP-4654K/53S4K
IC405	TPU3040-TC20	TPU3041TC-22-TP
IC411	BA1035F-E2	LM359PS-E20
IC415	BA1035F-E2	LM359DR-E2

# B (3/4) BOARD WAVEFORMS

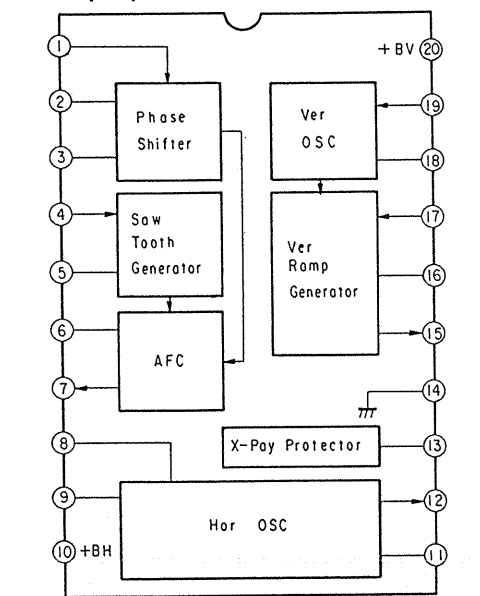


# B (3/4) BOARD TRANSISTOR VOLTAGE LIST

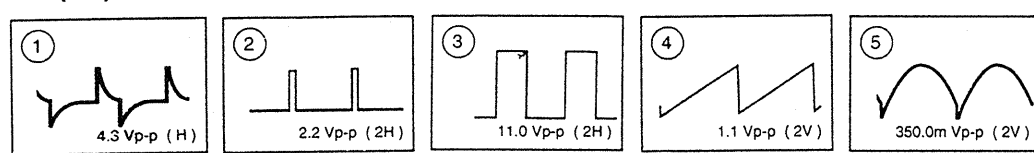
	B	C	E
Q401	6.3	11.8	5.7
Q402	11.3	6.3	11.8
Q403	6.4	11.6	5.8
Q404	6.2	11.8	5.5
Q405	3.0	11.3	2.4
Q406	5.7	11.8	5.0
Q407	3.9	GND	4.5
Q408	4.0	GND	4.5
Q409	0	5.0	GND
Q410	2.6	GND	3.2
Q411	3.1	0	GND
Q412	0	3.1	GND
Q413	0.2	GND	0.8
Q414	0.2	GND	0.8
Q415	0.2	GND	0.8
Q416	0.2	GND	0.8
Q417	5.5	GND	6.3
Q418	11.3	6.2	11.6
Q419	4.4	0.7	GND
Q420	0.6	4.5	GND
Q421	0	2.6	GND
Q422	0	2.6	GND
Q423	0	2.6	GND
Q424	0	0	GND
Q425	2.1	GND	2.4
Q426	2.0	GND	2.4
Q427	10.1	2.5	10.8
Q428	2.5	GND	2.6
Q429	-1.6	0	GND
Q430	1.3	8.8	1.3
Q431	3.8	GND	4.4
Q432	9.0	1.4	9.2
Q433	2.4	4.8	1.8
Q434	2.5	4.8	1.8
Q435	6.9	6.9	3.3
Q436	3.3	6.3	2.7
Q437	4.6	8.8	3.9
Q438	4.4	8.8	3.8
Q439	6.9	6.9	6.3
Q440	4.3	GND	4.8
Q441	1.1	2.5	0.5
Q442	3.3	6.3	2.5
Q443	6.3	8.8	5.6
Q444	0	0	0
Q445	4.4	8.1	3.8
Q446	5.0	8.8	4.5
Q447	3.9	GND	4.5
Q448	2.2	5.8	1.6
Q449	3.1	4.8	2.4
Q450	10.1	10.1	10.7
Q451	6.3	8.8	5.6
Q452	2.7	8.8	2.0
Q453	1.3	GND	1.7
Q454	3.1	4.8	2.5
Q455	4.7	8.8	4.0
Q456	-1.6	0	GND
Q457	3.0	4.8	2.5
Q458	5.4	8.8	4.7
Q459	2.5	GND	3.0
Q460	2.0	5.4	1.4
Q461	3.1	5.7	2.5
Q462	1.8	GND	2.5
Q463	5.7	8.8	5.1
Q464	2.1	6.2	1.5
Q465	2.6	4.8	2.0
Q466	6.2	8.8	5.6
Q467	1.0	GND	1.7
Q468	0.5	2.6	GND
Q469	0.5	2.6	GND
Q470	0.5	0	GND
Q471	0	0	0
Q472	0.6	0	GND
Q473	0	0	GND
Q474	0	0	GND
Q475	0.7	11.8	0
Q476	0	0	GND
Q477	0	0	GND
Q478	4.4	8.1	3.8
Q479	4.4	8.1	3.8
Q480	2.5	0.9	3.0
Q481	3.1	5.7	2.5
Q482	1.8	GND	2.5
Q483	5.7	8.8	5.1
Q484	2.1	6.2	1.5
Q485	2.6	4.8	2.0
Q486	6.2	8.8	5.6
Q487	1.0	GND	1.7
Q488	0.5	2.6	GND
Q489	0.5	2.6	GND
Q490	0.5	0	GND
Q491	0	0	0
Q492	0.6	0	GND
Q493	0	0	GND
Q494	0	0	GND
Q495	0.7	11.8	0
Q496	0	0	GND
Q497	0	0	GND
Q498	4.4	8.1	3.8
Q499	4.4	8.1	3.8
Q500	2.5	0.9	3.0
Q501	3.1	5.7	2.5
Q502	1.8	GND	2.5
Q503	5.7	8.8	5.1
Q504	2.1	6.2	1.5
Q505	2.6	4.8	2.0
Q506	6.2	8.8	5.6
Q507	1.0	GND	1.7
Q508	0.5	2.6	GND
Q509	0.5	2.6	GND
Q510	0.5	0	GND
Q511	0	0	0
Q512	0.6	0	GND
Q513	0	0	GND
Q514	0	0	GND
Q515	0.7	11.8	0
Q516	0	0	GND
Q517	0	0	GND
Q518	4.4	8.1	3.8
Q519	4.4	8.1	3.8
Q520	2.5	0.9	3.0
Q521	3.1	5.7	2.5
Q522	1.8	GND	2.5
Q523	5.7	8.8	5.1
Q524	2.1	6.2	1.5
Q525	2.6	4.8	2.0
Q526	6.2	8.8	5.6
Q527	1.0	GND	1.7
Q528	0.5	2.6	GND
Q529	0.5	2.6	GND
Q530	0.5	0	GND
Q531	0	0	0
Q532	0.6	0	GND
Q533	0	0	GND
Q534	0	0	GND
Q535	0.7	11.8	0
Q536	0	0	GND
Q537	0	0	GND
Q538	4.4	8.1	3.8
Q539	4.4	8.1	3.8
Q540	2.5	0.9	3.0
Q541	3.1	5.7	2.5
Q542	1.8	GND	2.5
Q543	5.7	8.8	5.1
Q544	2.1	6.2	1.5
Q545	2.6	4.8	2.0
Q546	6.2	8.8	5.6
Q547	1.0	GND	1.7
Q548	0.5	2.6	GND
Q549	0.5	2.6	GND
Q550	0.5	0	GND
Q551	0	0	0
Q552	0.6	0	GND
Q553	0	0	GND
Q554	0	0	GND
Q555	0.7	11.8	0
Q556	0	0	GND
Q557	0	0	GND
Q558	4.4	8.1	3.8
Q559	4.4	8.1	3.8
Q560	2.5	0.9	3.0
Q561	3.1	5.7	2.5
Q562	1.8	GND	2.5
Q563	5.7	8.8	5.1
Q564	2.1	6.2	1.5
Q565	2.6	4.8	2.0
Q566	6.2	8.8	5.6
Q567	1.0	GND	1.7
Q568	0.5	2.6	GND
Q569	0.5	2.6	GND
Q570	0.5	0	GND
Q571	0	0	0
Q572	0.6	0	GND
Q573	0	0	GND
Q574	0	0	GND
Q575	0.7	11.8	0
Q576	0	0	GND
Q577	0	0	GND
Q578	4.4	8.1	3.8
Q579	4.4	8.1	3.8
Q580	2.5	0.9	3.0
Q581	3.1	5.7	2.5
Q582	1.8	GND	2.5
Q583	5.7	8.8	5.1
Q584	2.1	6.2	1.5
Q585	2.6	4.8	2.0
Q586	6.2	8.8	5.6
Q587	1.0	GND	1.7
Q588	0.5	2.6	GND
Q589	0.5	2.6	GND
Q590	0.5	0	GND
Q591	0	0	0
Q592	0.6	0	GND
Q593	0	0	GND
Q594	0	0	GND
Q595	0.7	11.8	0
Q596	0	0	GND
Q597	0	0	GND
Q598	4.4	8.1	3.8
Q599	4.4	8.1	3.8
Q600	2.5	0.9	3.0
Q601	3.1	5.7	2.5
Q602	1.8	GND	2.5
Q603	5.7	8.8	5.1
Q604	2.1	6.2	1.5
Q605	2.6	4.8	2.0
Q606	6.2	8.8	5.6
Q607	1.0	GND	1.7
Q608	0.5	2.6	GND
Q609	0.5	2.6	GND
Q610	0.5	0	GND
Q611	0	0	0
Q612	0.6	0	GND
Q613	0	0	GND
Q614	0	0	GND
Q615	0.7	11.8	0
Q616	0	0	GND
Q617	0	0	GND
Q618	4.4	8.1	3.8
Q619	4.4	8.1	3.8
Q620	2.5	0.9	3.0
Q621	3.1	5.7	2.5
Q622	1.8	GND	2.5
Q623	5.7	8.8	5.1
Q624	2.1	6.2	1.5
Q625	2.6	4.8	2.0
Q626	6.2	8.8	5.6
Q627	1.0	GND	1.7
Q628	0.5	2.6	GND
Q629	0.5	2.6	GND
Q630	0.5	0	GND
Q631	0	0	0
Q632	0.6	0	GND
Q633	0	0	GND
Q634	0	0	GND
Q635	0.7	11.8	0
Q636	0	0	GND
Q637	0	0	GND
Q638	4.4	8.1	3.8
Q639	4.4	8.1	3.8
Q640	2.5	0.9	3.0
Q641	3.1	5.7	2.5
Q642	1.8	GND	2.5
Q643	5.7	8.8	5.1
Q644	2.1	6.2	1.5
Q645	2.6	4.8	2.0
Q646	6.2	8.8	5.6
Q647	1.0	GND	1.7
Q648	0.5	2.6	GND
Q649	0.5	2.6	GND
Q650	0.5	0	GND
Q651	0	0	0
Q652	0.6	0	GND
Q653	0	0	GND
Q654	0	0	GND
Q655	0.7	11.8	0
Q656	0	0	GND
Q657	0	0	GND
Q658	4.4	8.1	3.8
Q659	4.4	8.1	3.8
Q660	2.5	0.9	3.0
Q661	3.1	5.7	2.5
Q662	1.8	GND	2.5
Q663	5.7	8.8	5.1
Q664	2.1	6.2	1.5
Q665	2.6	4.8	2.0
Q666	6.2	8.8	5.6
Q667	1.0	GND	1.7
Q668	0.5	2.6	GND
Q669	0.5	2.6	GND
Q670	0.5	0	GND
Q671	0	0	0
Q672	0.6	0	GND
Q673	0	0	GND
Q674	0	0	GND
Q675	0.7	11.8	0
Q676	0	0	GND
Q677	0	0	GND
Q678	4.4	8.1	3.8
Q679	4.4	8.1	3.8
Q680	2.5	0.9	3.0
Q681	3.1	5.7	2.5
Q682	1.8	GND	2.5
Q683	5.7	8.8	5.1
Q684	2.1	6.2	1.5
Q685	2.6	4.8	2.0
Q686	6.2	8.8	5.6
Q687	1.0	GND	1.7
Q688	0.5	2.6	GND
Q689	0.5	2.6	GND
Q690	0.5	0	GND
Q691	0	0	0
Q692	0.6	0	GND
Q693	0	0	GND
Q694	0	0	GND
Q695	0.7	11.8	0
Q696	0	0	GND
Q697	0	0	GND
Q698	4.4	8.1	3.8
Q699	4.4	8.1	3.8
Q700	2.5	0.9	3.0
Q701	3.1	5.7	2.5
Q702	1.8	GND	2.5
Q703	5.7	8.8	5.1
Q704	2.1	6.2	1.5
Q705	2.6	4.8	2.0
Q706	6.2	8.8	5.6
Q707	1.0	GND	1.7
Q708	0.5	2.6	GND
Q709	0.5	2.6	GND
Q710	0.5	0	GND
Q711	0	0	0
Q712	0.6	0	GND
Q713	0	0	GND
Q714	0	0	GND
Q715	0.7	11.8	0
Q716	0	0	GND
Q717	0	0	GND
Q718	4.4	8.1	3.8
Q719	4.4	8.1	3.8
Q720	2.5	0.9	3.0
Q721	3.1	5.7	2.5
Q722	1.8	GND	2.5
Q723	5.7	8.8	5.1
Q724	2.1	6.2	1.5
Q725	2.6	4.8	2.0
Q726	6.2	8.8	5.6
Q727	1.0	GND	1.7
Q728	0.5	2.6	GND
Q729	0.5	2.6	GND
Q730	0.5	0	GND
Q731	0	0	0
Q732	0.6	0	GND
Q733	0	0	GND
Q734	0	0	GND
Q735	0.7	11.8	0
Q736	0	0	GND
Q737	0	0	GND
Q738	4.4	8.1	3.8
Q739	4.4	8.1	3.8
Q740	2.5	0.9	3.0
Q741	3.1	5.7	2.5
Q742	1.8	GND	2.5
Q743	5.7	8.8	5.1
Q744	2.1	6.2	1.5
Q745	2.6	4.8	2.0
Q746	6.2	8.8	5.6
Q747	1.0	GND	1.7
Q748	0.5	2.6	GND
Q749	0.5	2.6	GND
Q750	0.5	0	GND
Q751	0	0	0
Q752	0.6	0	GND
Q753	0	0	GND
Q754	0	0	GND
Q755	0.7		



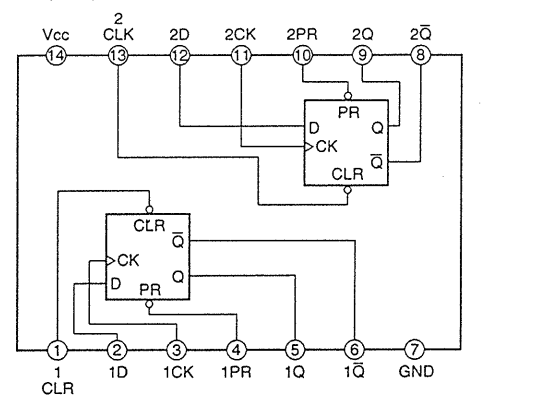
# **B (4/4) BOARD : IC801 LA7856A**



## **• B (4/4) BOARD WAVEFORMS**



# **B (4/4) BOARD : IC802 MC74HC74AF-T2**



## **B(4/4) BOARD \* MARK LIST**

IC804	KP-46S4/46S4V/53S4/53S4U	KP-46S4K/53S4K
	BA10358F-E2	LM358DR-EZ

# **B BOARD**

DIODE	D803	G-4	IC413	O-3	Q35	B-10	Q416	K-2	Q458	L-5
D1	C-10	⑧	IC414	E-5	Q36	C-9	Q417	G-1	Q459	K-5
D2	N-9	⑧	IC415	E-2	Q37	C-9	Q418	J-1	Q460	D-4
D3	N-9	⑧	IC601	L-4-D-4	Q38	E-9	Q419	B-5	Q461	A-4
D4	D-9	⑧	IC801	I-5-G-5	Q39	D-9	Q420	N-5	Q462	E-5
D5	K-10	⑧	IC802	F-5	Q40	L-9	Q421	A-5	Q463	O-4
D201	O-7	⑧	IC804	F-5	Q41	M-9	Q422	A-5	Q464	D-5
D203	C-6	⑧	IC805	F-4	Q42	F-9	Q423	A-5	Q465	E-5
D204	N-6	⑧	TRANSISTOR	*	Q43	L-9	Q424	N-4	Q466	D-5
D205	M-7	⑧	Q1	N-9	Q201	A-7	Q425	O-4	Q467	D-4
D206	E-6	⑧	Q2	N-9	Q202	O-8	Q426	O-4	Q468	A-4
D207	L-6	⑧	Q3	D-10	Q204	N-7	Q427	N-5	Q469	A-4
D208	C-7	⑧	Q4	D-10	Q206	O-8	Q428	O-5	Q470	A-4
D209	C-7	⑧	Q5	D-9	Q207	A-7	Q429	I-2	Q471	E-1
D210	C-7	⑧	Q6	L-9	Q208	D-6	Q430	N-5	Q472	M-1
D211	D-6	⑧	Q7	N-9	Q209	B-7	Q431	N-5	Q473	E-2
D213	D-6	⑧	Q8	N-9	Q210	N-6	Q432	O-5	Q474	E-2
D214	F-6	⑧	Q9	D-9	Q211	D-6	Q433	E-4	Q475	L-4
D402	B-1	⑧	Q10	D-9	Q212	D-6	Q434	E-4	Q476	E-1
D403	N-2	⑧	Q11	D-10	Q213	F-6	Q435	M-5	Q477	E-1
D404	F-2	⑧	Q12	B-8	Q214	C-7	Q436	M-5	Q479	G-3
D405	N-4	⑧	Q13	N-9	Q215	D-6	Q437	L-5	Q601	D-5
D406	N-4	⑧	Q14	B-8	Q216	F-6	Q438	D-5	Q602	D-5
D407	O-5	⑧	Q15	N-10	Q217	F-6	Q439	M-5	Q603	L-3
D408	B-1	⑧	Q16	B-10	Q218	L-6	Q440	L-5	Q604	D-5
D410	B-5	⑧	Q17	K-5	Q219	K-6	Q441	M-5	Q605	L-3
D411	B-5	⑧	Q18	K-9	Q220	K-6	Q442	M-5	Q606	D-5
D412	B-5	⑧	Q19	K-9	Q401	J-1	Q443	M-5	Q607	L-3
D414	N-5	⑧	Q20	N-9	Q402	J-1	Q444	H-3	Q801	G-5
D415	M-5	⑧	Q21	N-10	Q403	G-1	Q445	G-3	Q803	G-4
D416	D-2	⑧	Q22	K-10	Q404	L-1	Q446	D-5	Q804	G-4
D417	O-6	⑧	Q23	B-8	Q405	G-1	Q447	L-5	Q805	J-6
D418	D-5	⑧	Q24	K-10	Q406	C-2	Q448	M-4	Q806	J-6
D419	L-5	⑧	Q25	B-8	Q407	J-2	Q449	F-4		
D420	L-5	⑧	Q26	O-9	Q408	J-2	Q450	N-5		
D421	K-5	⑧	Q27	O-9	Q409	N-2	Q451	M-5		
D422	B-5	⑧	Q28	O-10	Q410	O-2	Q452	D-5		
D424	E-2	⑧	Q29	O-9	Q411	N-2	Q453	C-5		
D425	N-4	⑧	Q30	A-10	Q412	B-2	Q454	K-5		
D426	B-3	⑧	Q31	O-10	Q413	K-3	Q455	O-5		
D427	B-3	⑧	Q32	A-10	Q414	J-2	Q456	I-2		
D801	G-5	⑧	Q34	C-10	Q415	J-2	Q457	E-5		

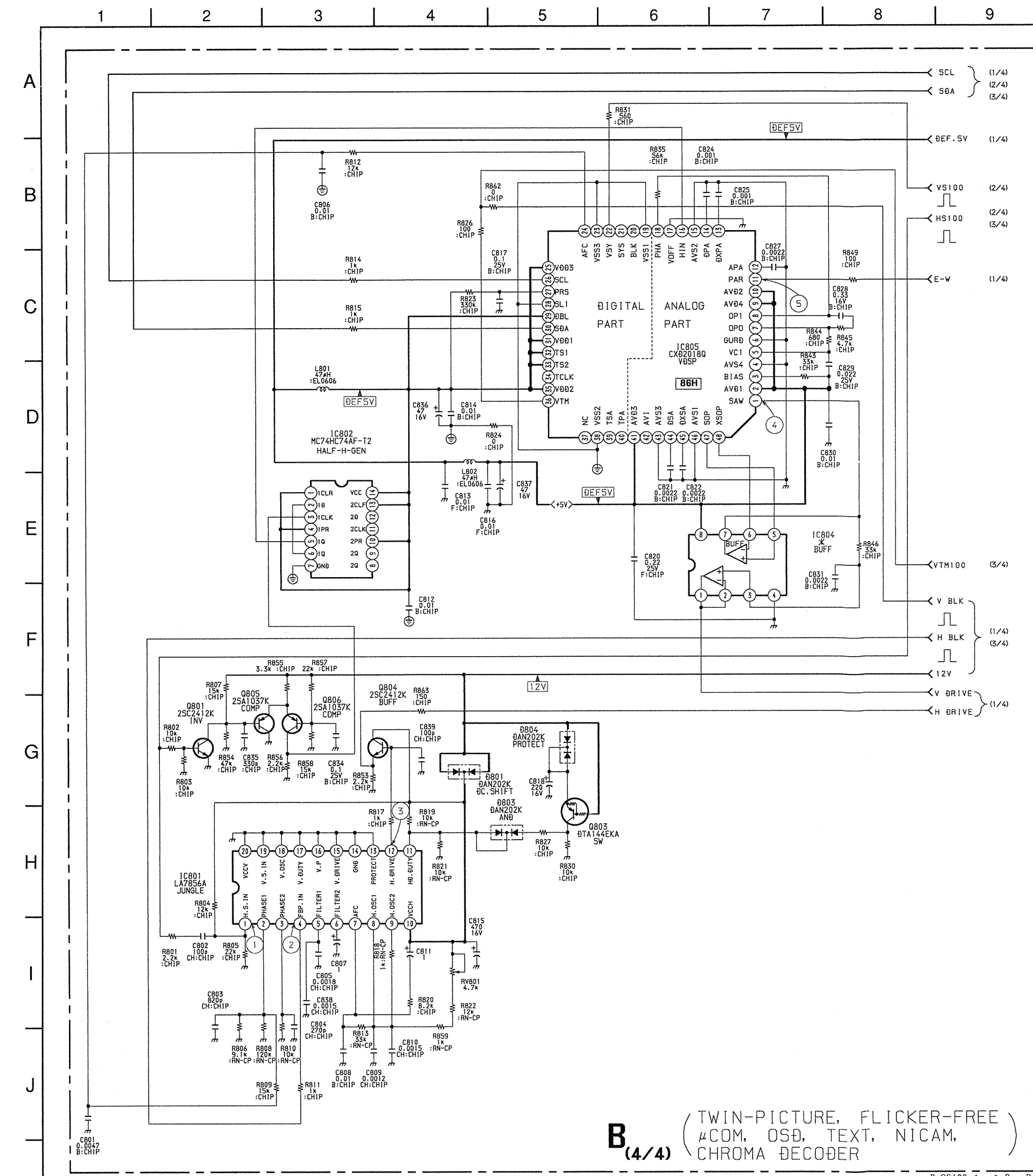
## **B(4/4) BOARD IC VOLTAGE LIST**

IC801	Pin	Volts	Pin	Volts
	1	7.3	4	GND
	2	7.3	5	2.3
	3	7.8	6	GND
	4	0.4	7	2.3
	5	3.7	8	2.6
	6	2.9	9	5.0
	7	6.4	10	5.0
	8	5.9	11	2.3
	9	5.5	12	2.3
	10	11.3	13	1.7
	11	5.7	14	1.4
	12	4.5	15	GND
	13	GND	16	2.5
	14	GND	17	GND
	15	GND	18	2.6
	16	GND	19	GND
	17	GND	20	0.6
	18	GND	21	-
	19	GND	22	0
	20	GND	23	0
IC802	1	5.0	24	0.9
	2	2.5	25	5.0
	3	3.4	26	4.4
	4	5.0	27	4.8
	5	2.5	28	GND
	6	2.5	29	5.0
	7	GND	30	4.3
	8	-	31	5.0
	9	0.6	32	5.0
	10	5.0	33	5.0
	11	0.4	34	-
	12	0	35	5.0
	13	5.0	36	2.8
	14	5.0	37	-
IC804	1	1.9	38	GND
	2	1.9	39	-
	3	1.9	40	-
	4	GND	41	5.0
	5	1.8	42	-
	6	1.8	43	GND
	7	1.8	44	1.5
	8	5.0	45	1.5
IC805	1	1.9	46	GND
	2	5.0	47	1.8
	3	1.7	48	1.8

## **B(4/4) BOARD TRANSISTOR VOLTAGE LIST**

Q801	B	C	E
Q801	0.1	6.9	GND
Q803	12.0	0	11.9
Q804	4.5	11.3	4.5
Q805	6.9	GND	4.8
Q806	4.9	3.4	4.8

All voltages are in V.  
- : Blank Pin

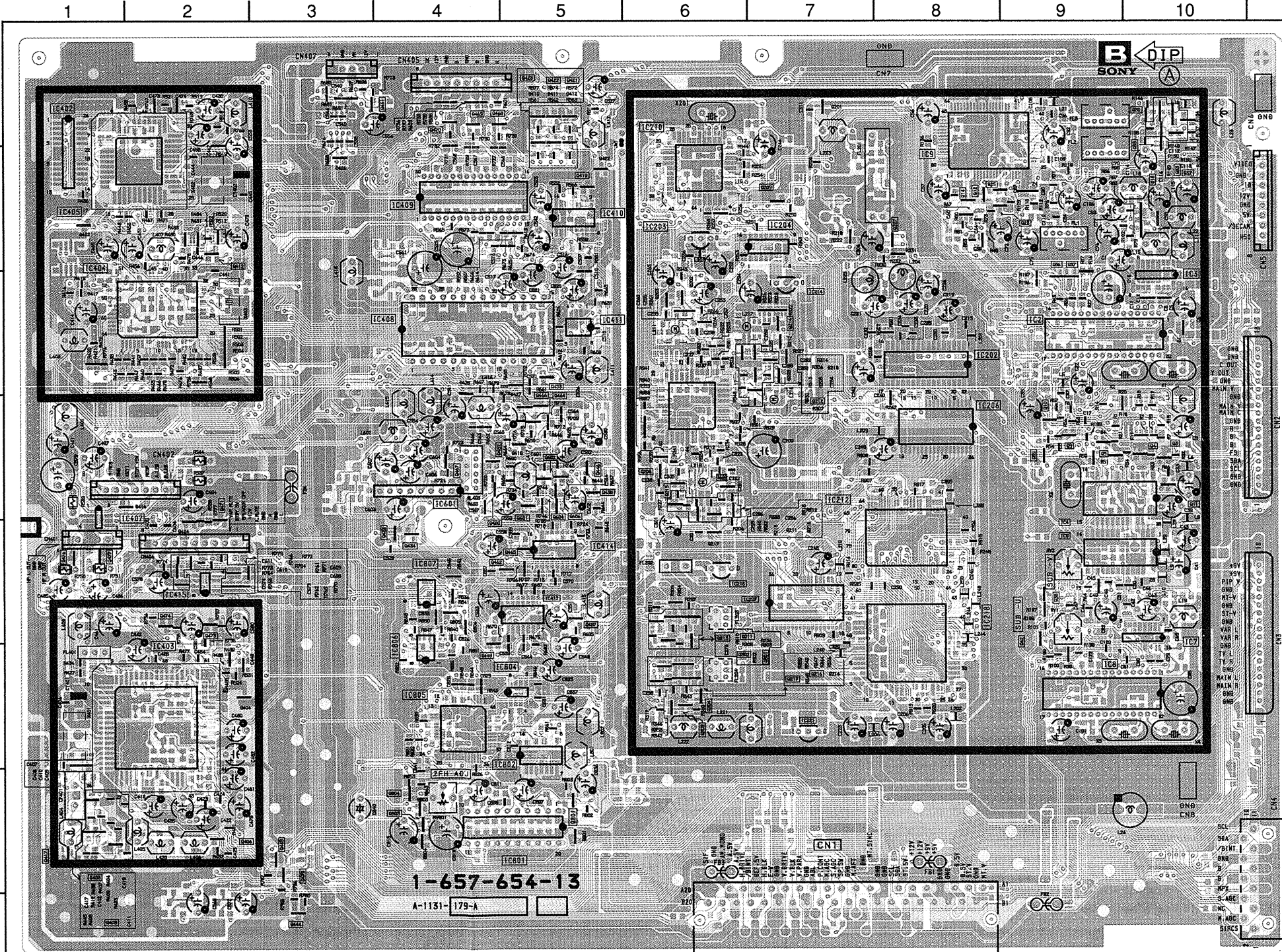


**B (4/4)** (TWIN-PICTURE, FLICKER-FREE)  
#COM, OSD, TEXT, NICAM,  
CHROMA DECODER

B-S5400, <...>B...-P4

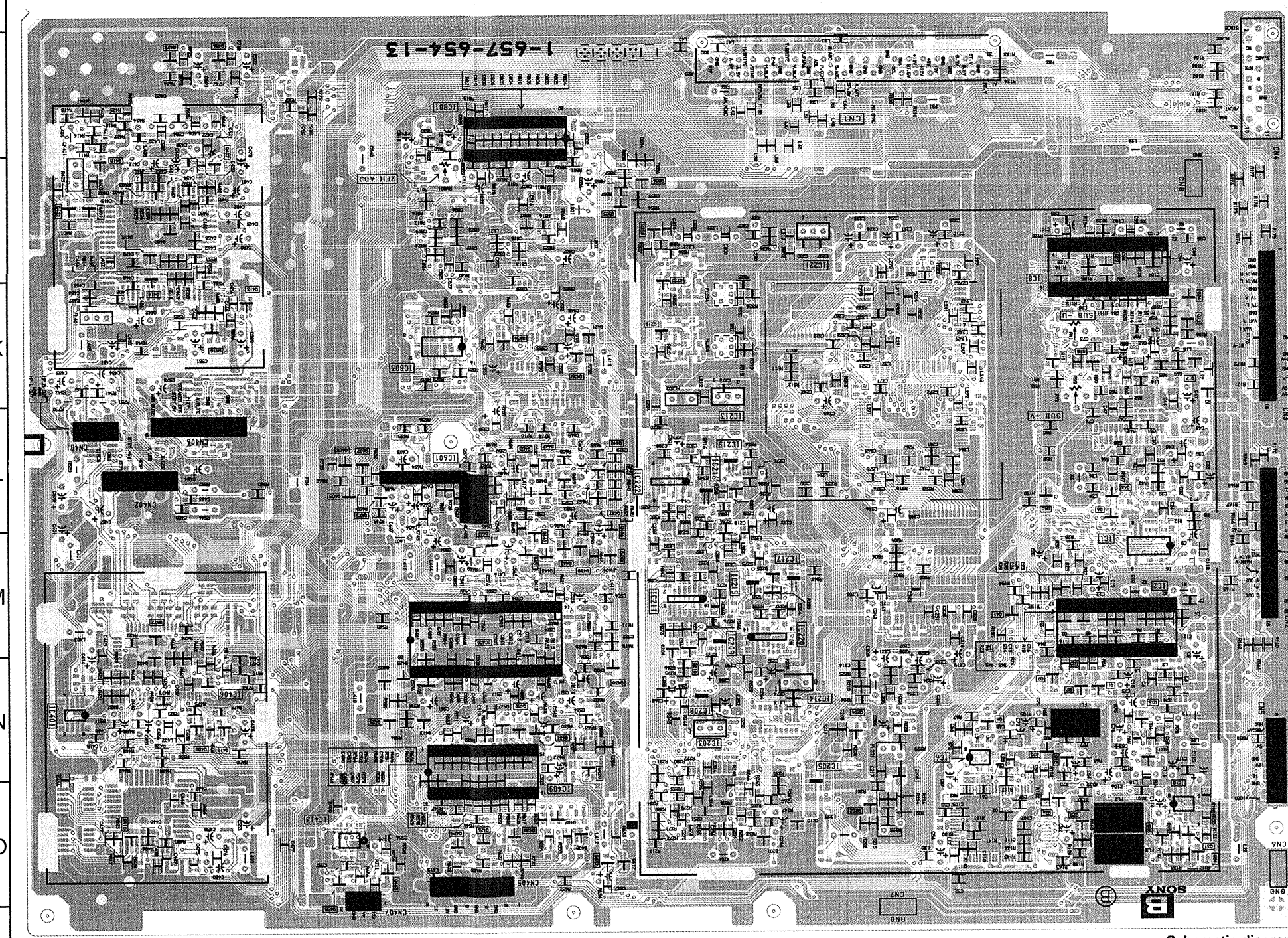
**B** TWIN-PICTURE, FLICKER-FREE,  
#COM, OSD, TEXT, NICAM,  
CHROMA DECODER

## **- B BOARD -**



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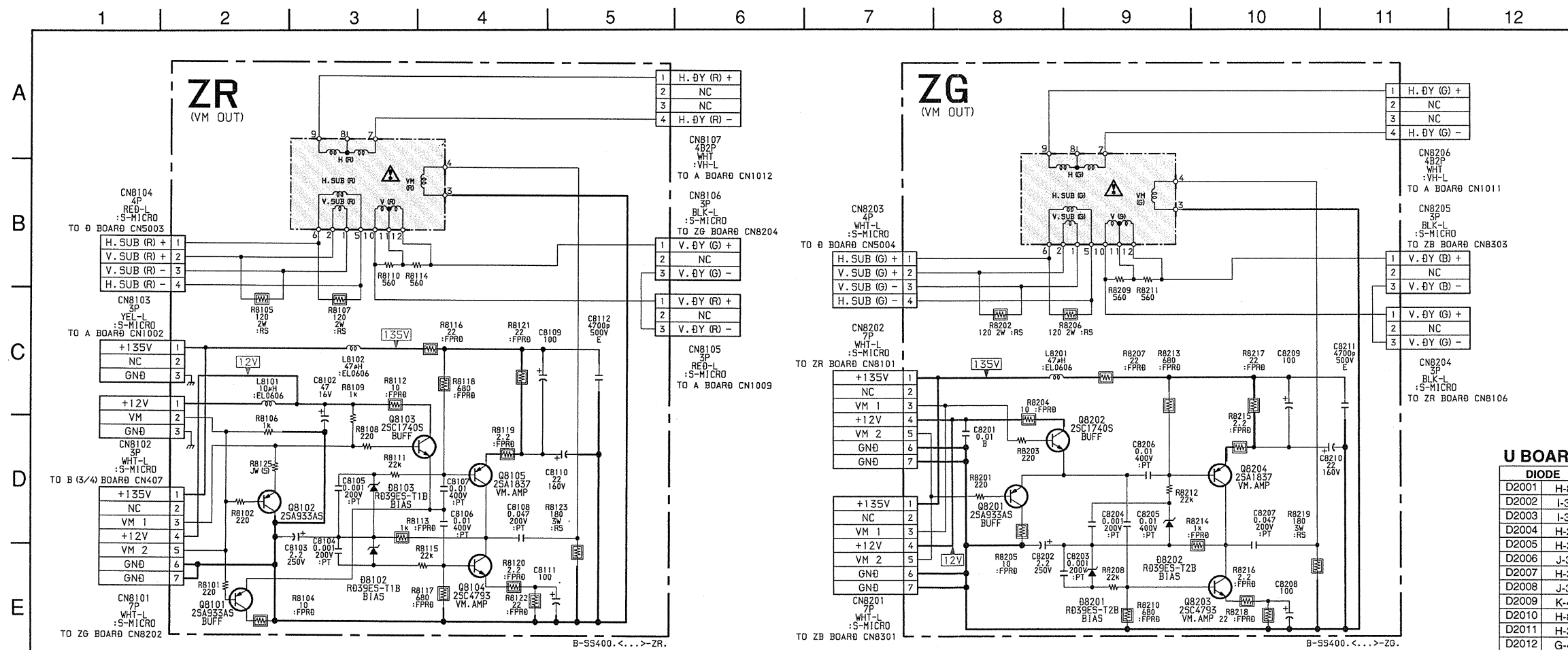
< Component Side >



Schematic diagrams

← B (4/4) board ZR ZG ZB board →





	B	C	E
Q8101	4.0	0	4.4
Q8102	4.4	GND	4.7
Q8103	4.7	12.3	4.4
Q8104	1.0	67.7	0.4
Q8105	134.3	67.7	135.0

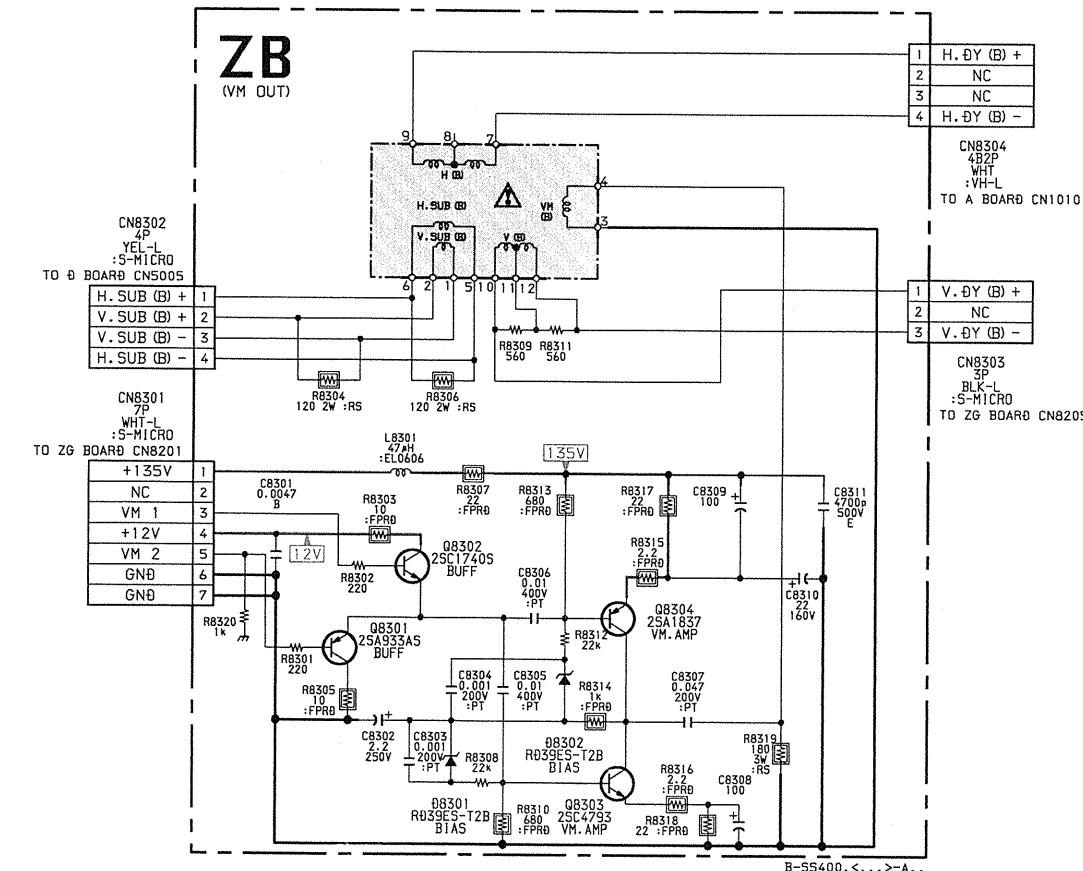
All voltages are in V.



	B	C	E
Q8201	4.0	0	4.4
Q8202	4.7	12.3	4.4
Q8203	1.0	67.7	0.4
Q8204	134.3	67.7	134.9

All voltages are in V.

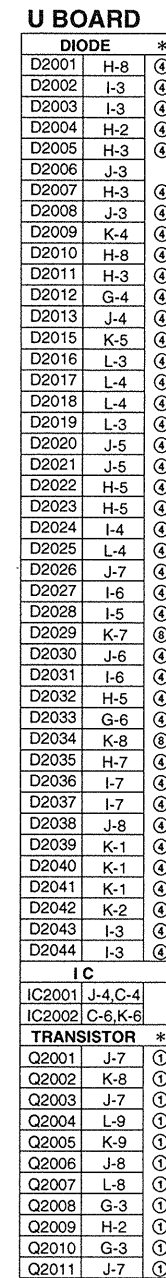
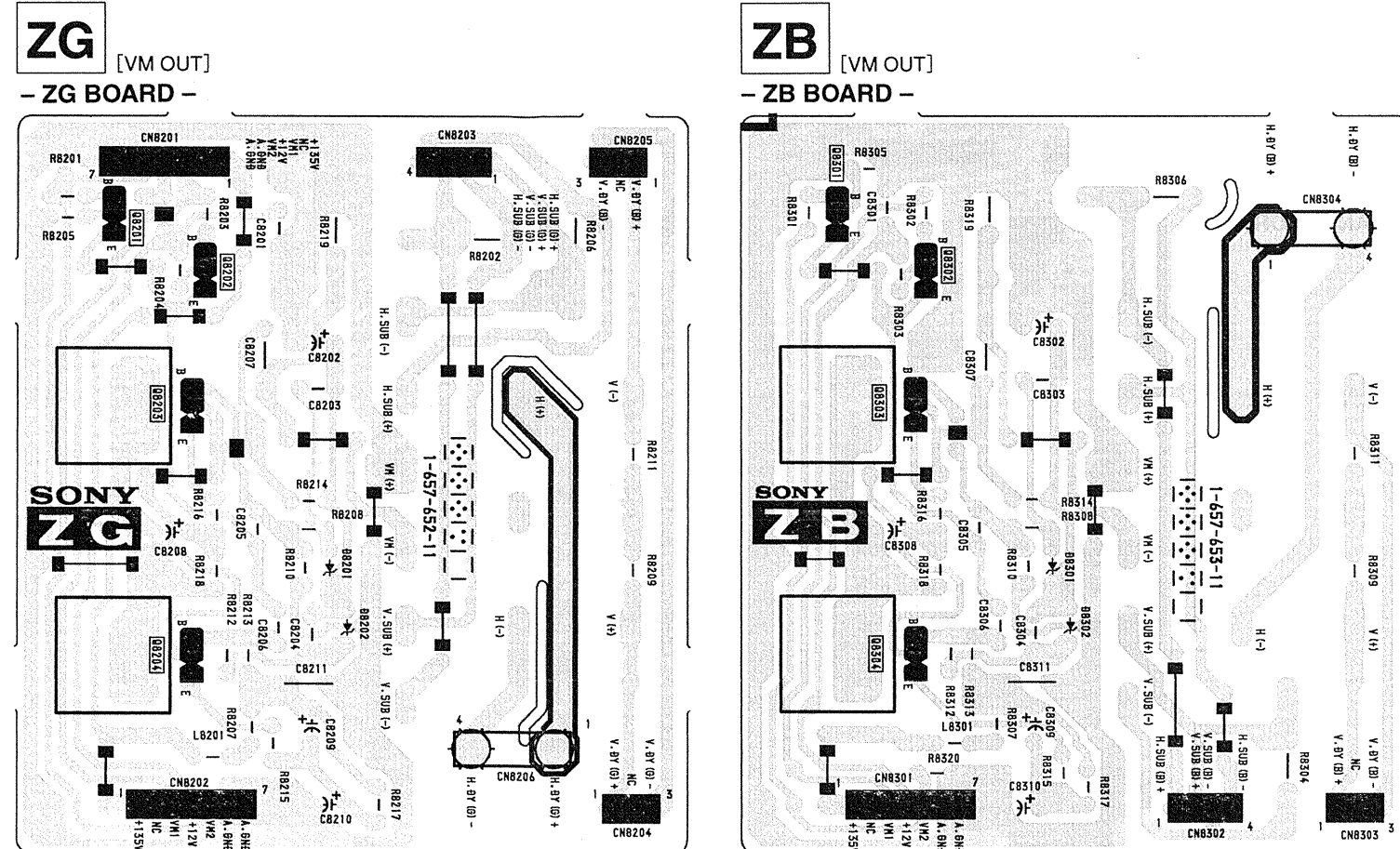
All voltages are in V.



### ZB BOARD TRANSISTOR VOLTAGE LIST

	B	C	E
Q8301	4.0	0	4.4
Q8302	4.7	12.3	4.4
Q8303	1.0	67.7	0.4
Q8304	134.3	67.7	134.9


All voltages are in V.

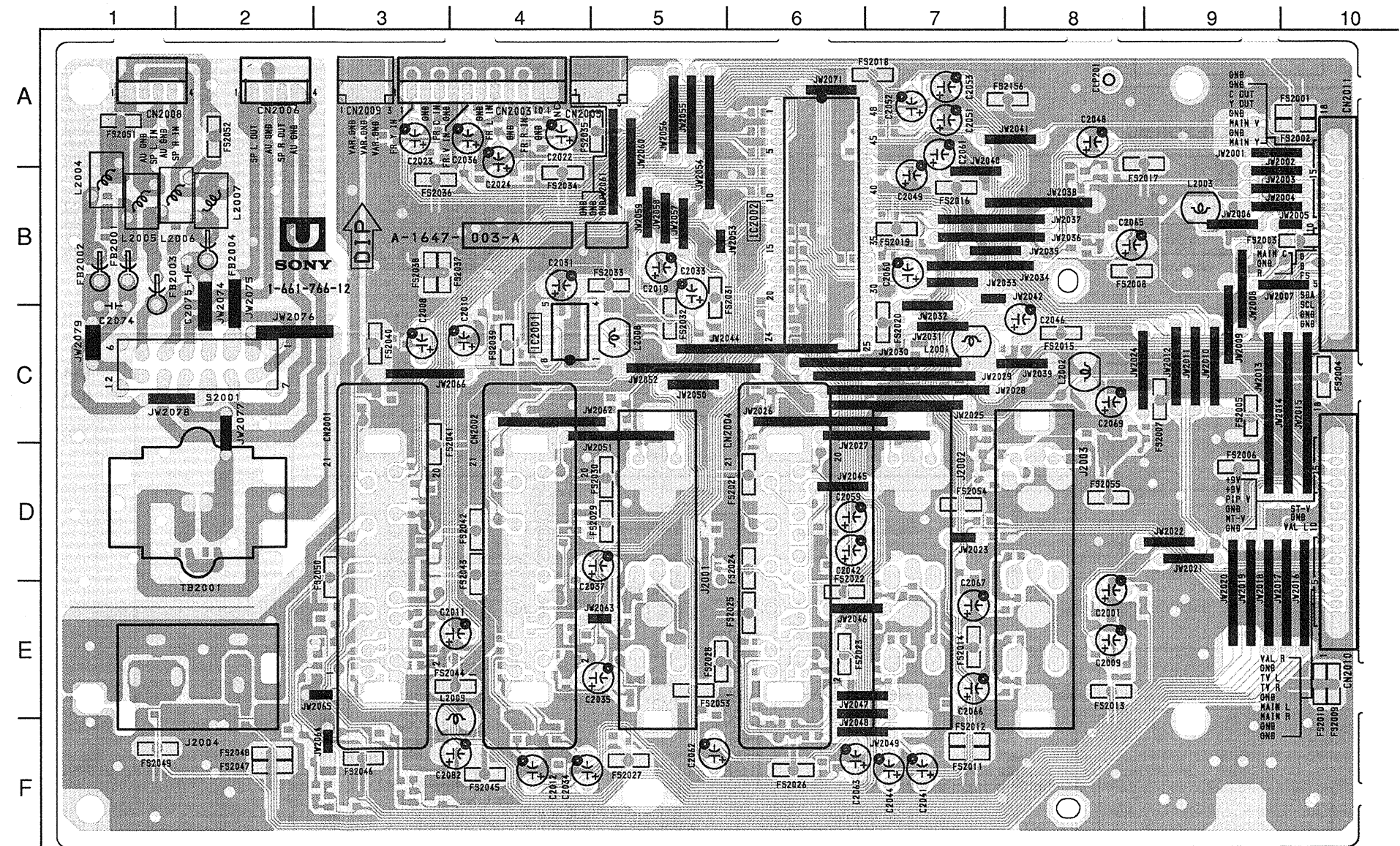


**U** [A/V SWITCH, P IN P,  
AV-INPUT/OUTPUT, AUDIO LINE OUTPUT]

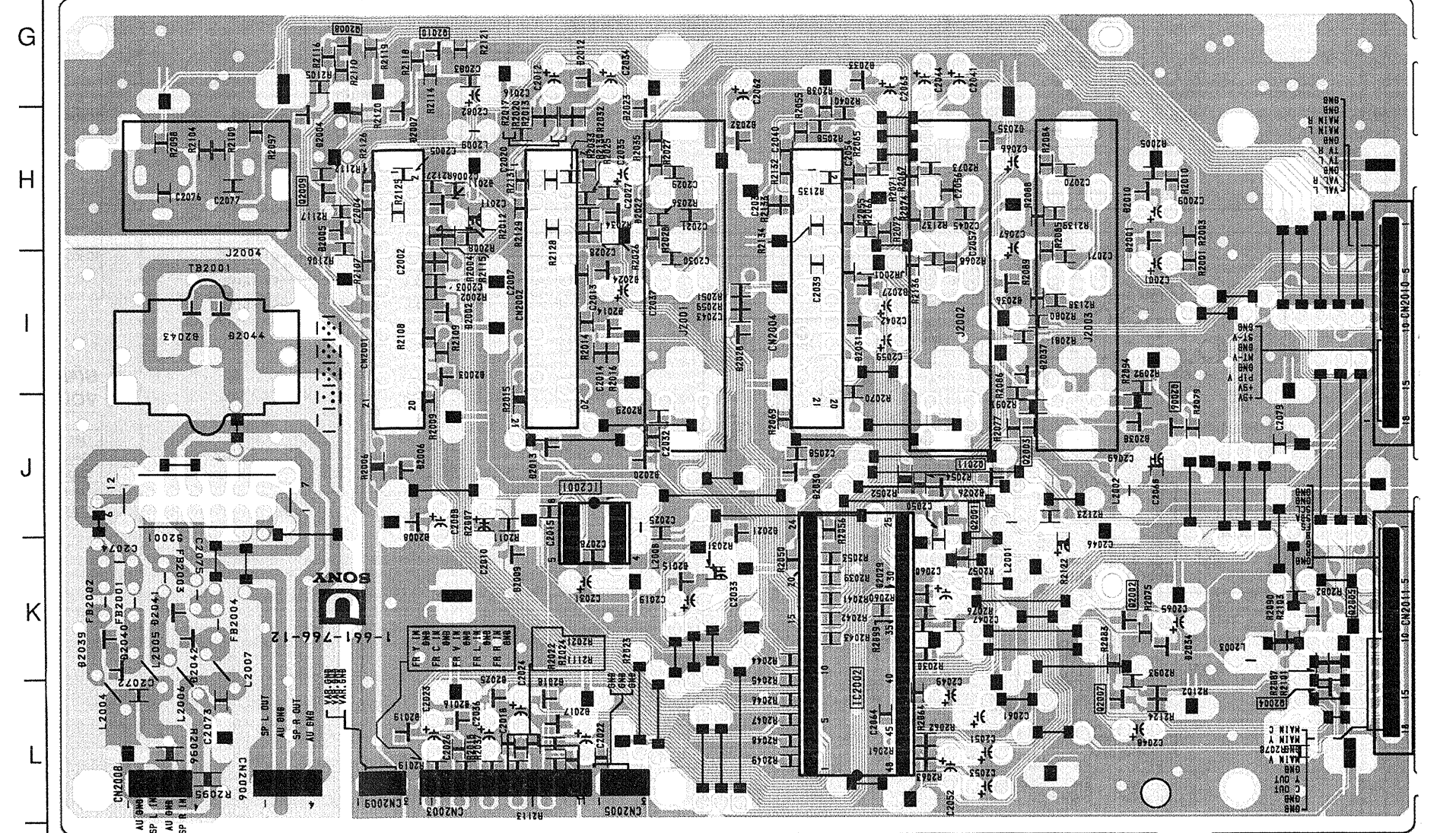
– U BOARD –

NOTE:

-  : Pattern from the side which enables seeing.
-  : Pattern of the rear side.

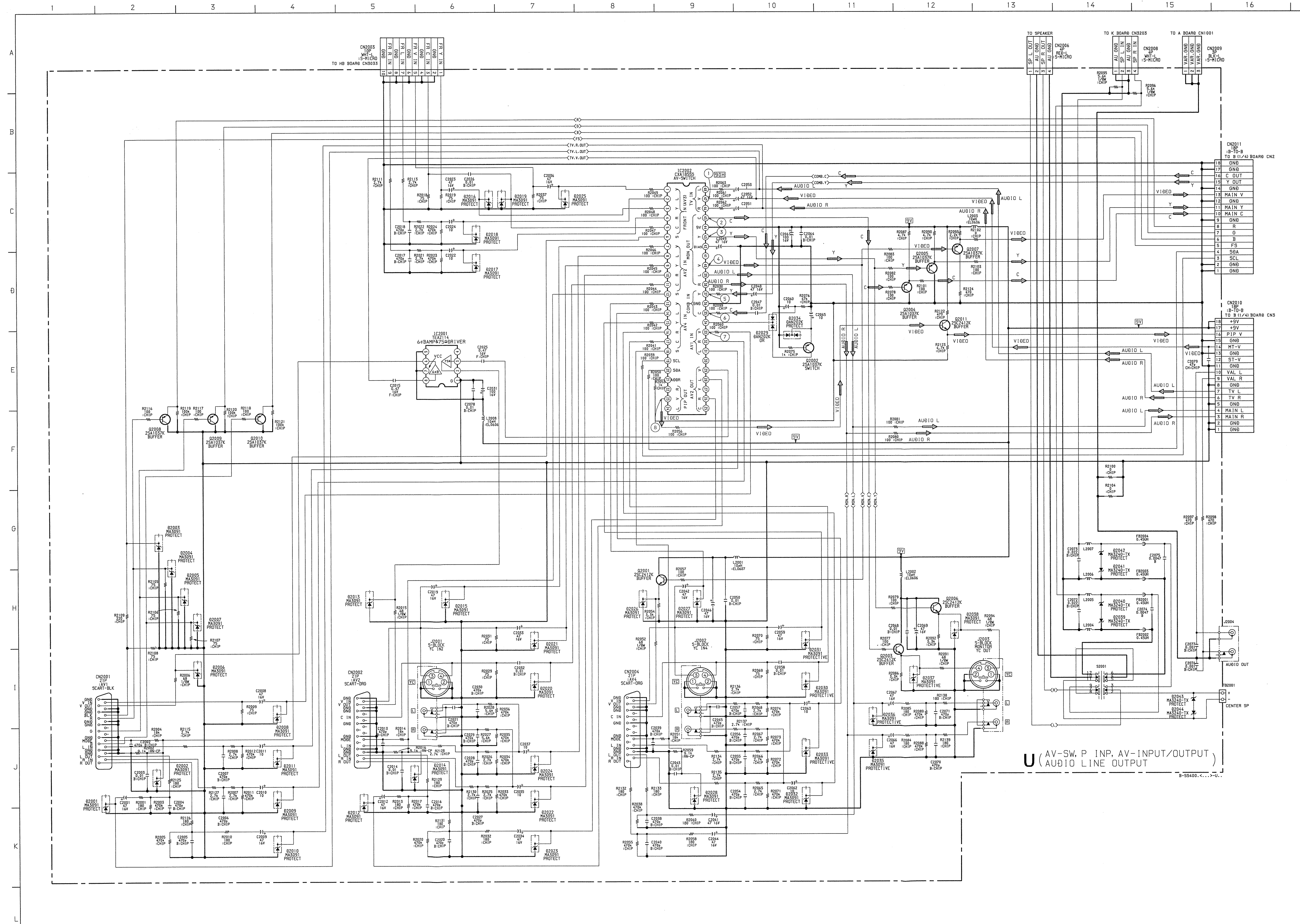


< Component Side >



< Conductor Side >





U BOARD IC VOLTAGE LIST

	Pin	Voltages
IC2001	1	GND
	2	2.0
	3	2.7
	5	8.8
	6	1.8
	7	8.8
	8	2.2
	9	8.8
	10	2.2
	IC2002	1
2		4.5
3		4.5
4		4.5
5		4.5
6		0
7		4.5
8		4.5
9		4.5
10		4.5
11		4.5
12		0
13		4.5
14		4.5
15		4.5
16		4.5
17		4.5
18		0
19		4.8
20		4.8
21		0
22		-
23		4.5
24		-
25		-
26		4.5
27		-
28		4.5
29		4.5
30		-
31	4.5	
32	4.5	
33	4.5	
34	0.5	
35	4.5	
36	GND	
37	4.5	
38	4.5	
39	4.5	
40	4.5	
41	-	
42	4.5	
43	4.5	
44	8.8	
45	8.8	
46	8.8	
47	8.8	
48	8.8	

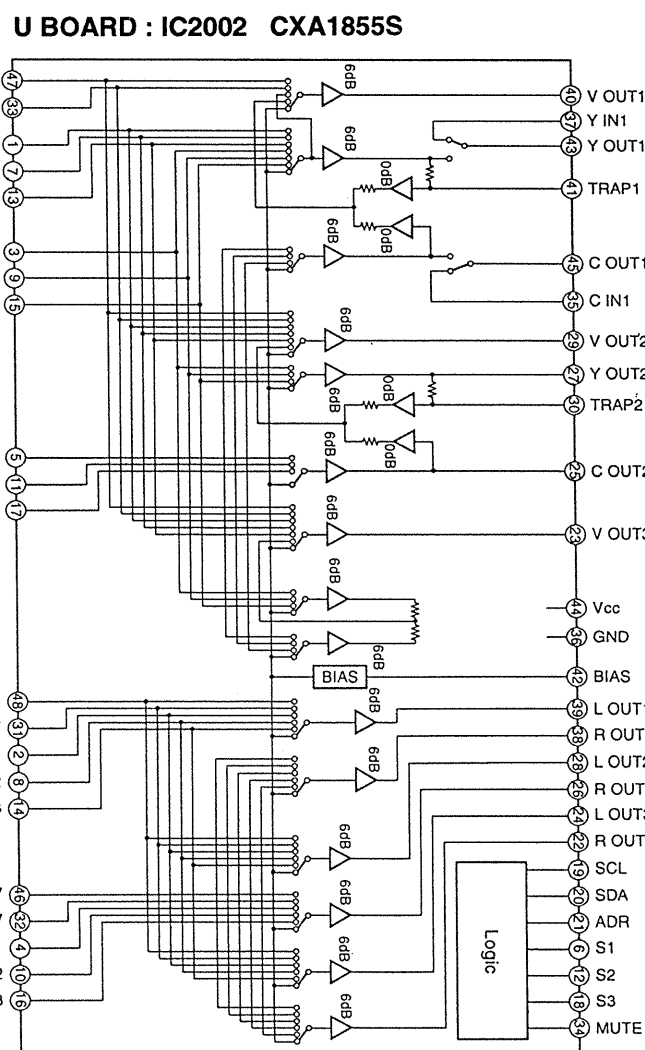
All voltages are in V.  
-: Blank Pin

**U BOARD TRANSISTOR VOLTAGE LIST**

Transistor	B	C	E
Q2001	4.4	8.8	3.8
Q2002	8.8	1.2	8.8
Q2003	4.5	8.8	3.9
Q2004	4.5	GND	5.1
Q2005	4.5	GND	5.1
Q2006	4.4	8.8	3.8
Q2007	4.4	0.8	5.0
Q2008	0	GND	0
Q2009	0	GND	0
Q2010	0	GND	0
Q2011	0	3.8	0

All voltages are in V.

- U BOARD WAVEFORMS**
- 1.4Vp-p (H)
  - 1.7Vp-p (H)
  - 2.5Vp-p (H)
  - 2.8Vp-p (H)
  - 2.5Vp-p (H)
  - 1.5Vp-p (H)
  - 2.6Vp-p (H)
  - 2.5Vp-p (H)



D BOARD TRANSISTORE VOLTAGE LIST				
	B	C	E	
Q5001	0	5.7	GND	
Q5002	-3.2	-5.0	-2.6	
Q5003	2.5	5.1	1.9	
Q5004	0	5.0	GND	
Q5101	0	3.5	GND	
Q5102	0	3.3	GND	
Q5401	0	4.8	GND	
Q5411	0	5.7	GND	

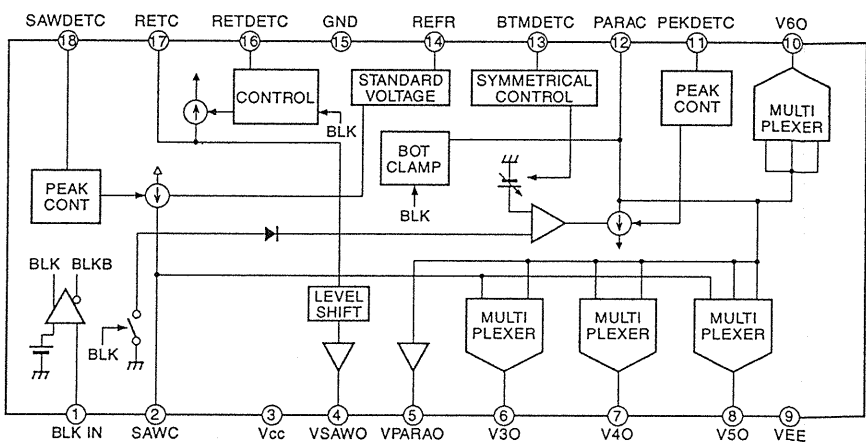
All voltages are in V.

### D BOARD IC VOLTAGE LIST

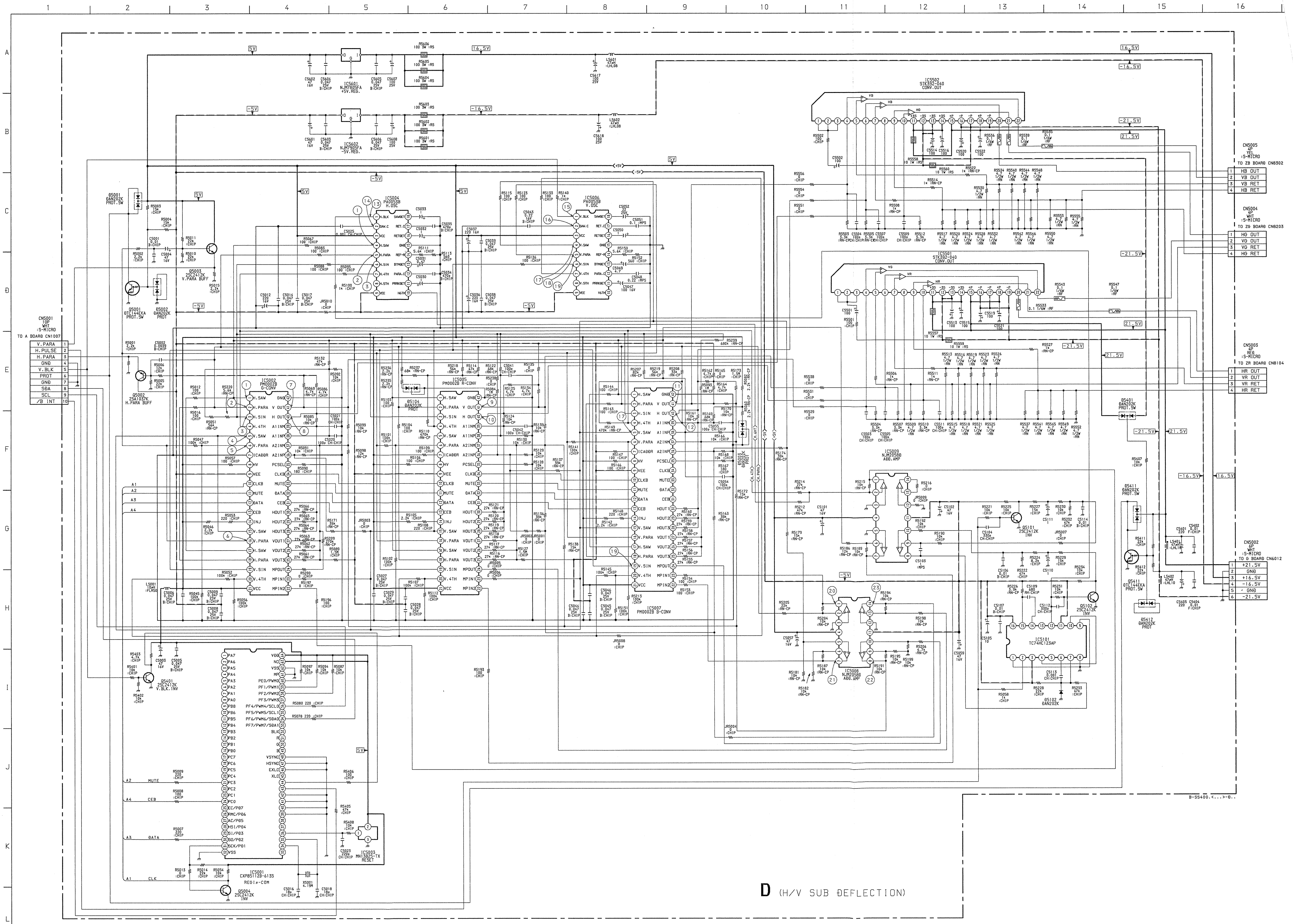
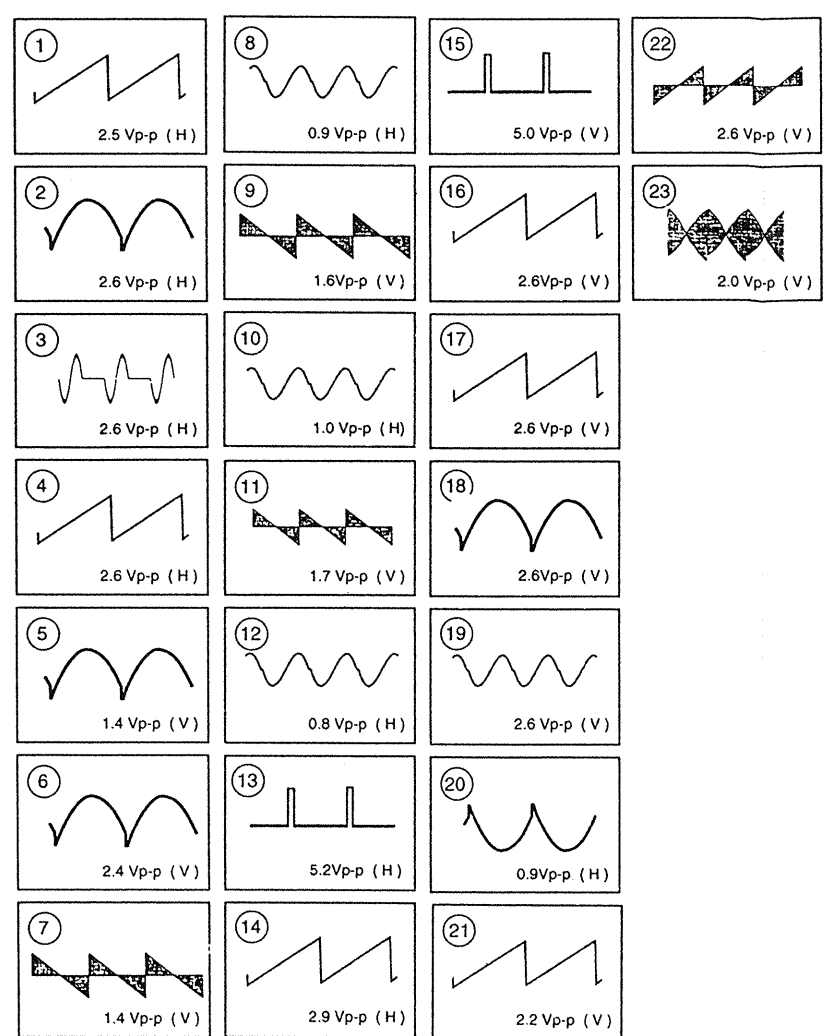
Pin	Voltages	Pin	Voltages	Pin	Voltages	Pin	Voltages	Pin	Voltages
IC5001		IC5003		IC5004		IC5006		IC5008	
21	5.1	32	0	27	0	25	0	14	0.3
24	5.0	33	5.0	28	0	26	0	15	1.8
30	0	34	5.0	29	0	27	0	16	5.0
31	0	35	0	30	-0.6	28	0	1	20.8
32	GND	36	0	31	5.0	29	0	2	20.8
34	2.5	37	0	32	0	30	-0.6	3	20.8
35	2.2	38	0	33	5.0	31	5.0	4	0
36	5.1	39	0	34	5.0	32	0	5	0
39	GND	40	0	35	0	33	5.0	6	-0.2
40	GND	41	0	36	5.0	34	5.0	7	-0.2
41	GND	42	GND	37	0	35	0	8	GND
42	GND	1	5.1	38	0	36	0	9	-0.2
43	5.1	2	5.1	39	0	37	0	10	-0.2
44	4.7	3	GND	40	0	38	0	11	22.2
46	0	1	0.8	41	0	39	0	12	-21.8
47	0	42	GND	42	GND	40	0	13	-21.8
48	0	3	5.1	43	0	41	0	14	22.2
54	4.5	4	0	2	1.1	42	GND	15	22.4
56	4.6	5	-1.0	3	5.1	1	0.5	16	21.9
58	0	6	0	4	0	2	0	17	21.9
59	0	7	-0.8	5	-1.0	3	GND	18	22.4
60	0	8	-5.0	6	0	4	5.1	19	-21.9
61	GND	10	0.1	7	-0.8	5	0	20	-0.5
62	GND	11	0.4	9	-5.0	6	0	21	-0.3
63	5.1	12	-1.0	10	0.1	7	0	22	0
64	5.1	13	0.3	11	0.4	8	0	1	20.8
1	0	14	1.2	12	-1.0	9	0	2	20.8
2	-1.0	15	GND	13	0.3	10	0	3	20.8
3	0	16	-1.2	14	1.2	11	-5.0	4	0
4	-0.8	17	1.9	15	GND	12	GND	5	0
5	0	18	-1.2	16	-1.2	13	0	6	-0.2
6	-0.4	19	1.9	17	1.9	14	0	7	-0.2
7	0	2	-1.0	18	-1.2	1	0.3	8	GND
8	5.0	3	0	19	0	2	0	9	-0.2
9	-5.0	4	-0.8	2	-1.0	3	GND	10	-0.2
10	5.0	5	0	3	0	4	5.0	11	22.2
11	5.0	6	-0.4	4	-0.8	5	GND	12	-21.8
12	0	7	5.0	5	0	6	0	13	-21.8
13	5.0	8	5.0	6	-0.4	7	0	14	22.2
14	-2.2	9	-5.0	7	-5.0	8	0	15	22.4
15	0	10	5.0	8	5.0	9	0	16	21.9
16	-0.9	11	5.0	9	-5.0	10	0	17	21.9
17	0	12	0	10	5.0	11	-5.0	18	22.4
18	-1.1	13	5.0	11	5.0	12	0	19	-21.9
19	0	14	-2.2	12	0	13	0	20	-0.5
20	-0.4	15	0	13	5.0	14	0	21	-0.3
21	5.0	16	-0.9	14	-2.2	1	GND	22	0
22	0.3	17	0	15	0	2	0	1	10.6
23	0	18	-1.1	16	-0.9	3	5.0	2	GND
24	0	19	0	17	0	4	3.4	3	0.1
25	0	20	-0.4	18	-1.1	5	2.5	4	GND
26	0	21	1.4	19	0	6	1.7	5	GND
27	0	22	0	20	-0.4	7	0	6	GND
28	0	23	0	21	5.0	8	GND	7	-5.0
29	0	24	0	22	0	9	GND		
30	-0.6	25	0	23	0	10	3.4		
31	5.0	26	0	24	0	11	5.1		
						12	0.8		

All voltages are in V.  
Pin numbers which are not described are not used.

### D BOARD : IC5004, 5006 PA0053B

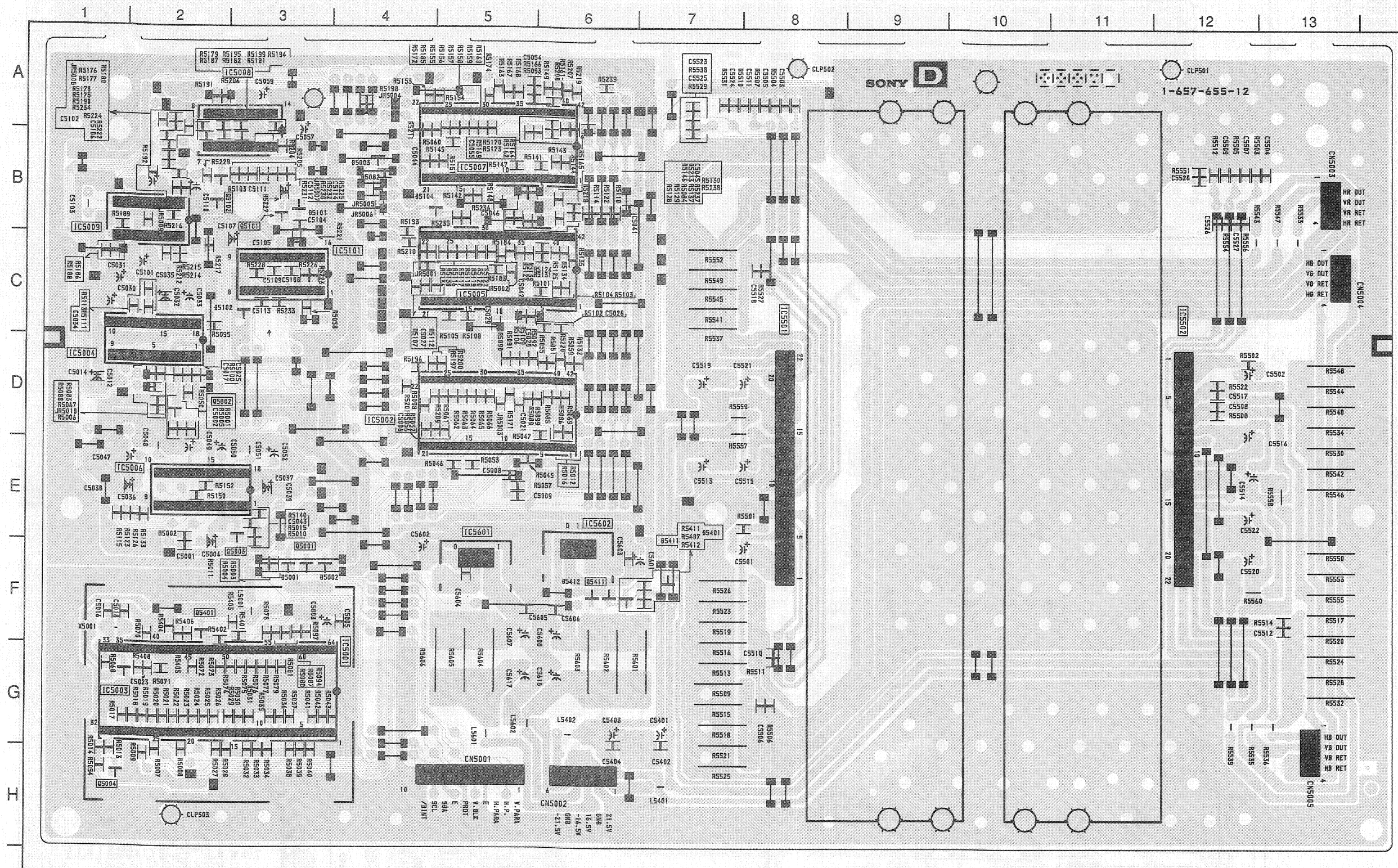


### D BOARD WAVEFORMS



D (H/V SUB DEFLECTION)





## D BOARD

DIODE		*
D5001	F-3	⑧
D5002	F-3	⑧
D5003	B-4	⑧
D5102	C-3	⑧
D5104	B-4	⑧
D5401	F-7	⑧
D5411	F-6	⑧
D5412	F-6	⑧
I C		
C5001	F-3	
C5002	D-5	
C5003	G-2	
C5004	D-2	
C5005	C-5	
C5006	E-2	
C5007	B-5	
C5008	B-3	
C5009	B-2	
C5101	C-3	
C5501	E-8	
C5502	E-12	
C5601	F-5	
C5602	F-6	
TRANSISTOR		*
Q5001	F-3	①
Q5002	D-2	①
Q5003	E-3	①
Q5004	H-1	①
Q5101	B-3	①
Q5102	B-2	①
Q5401	F-2	①
Q5411	F-6	①



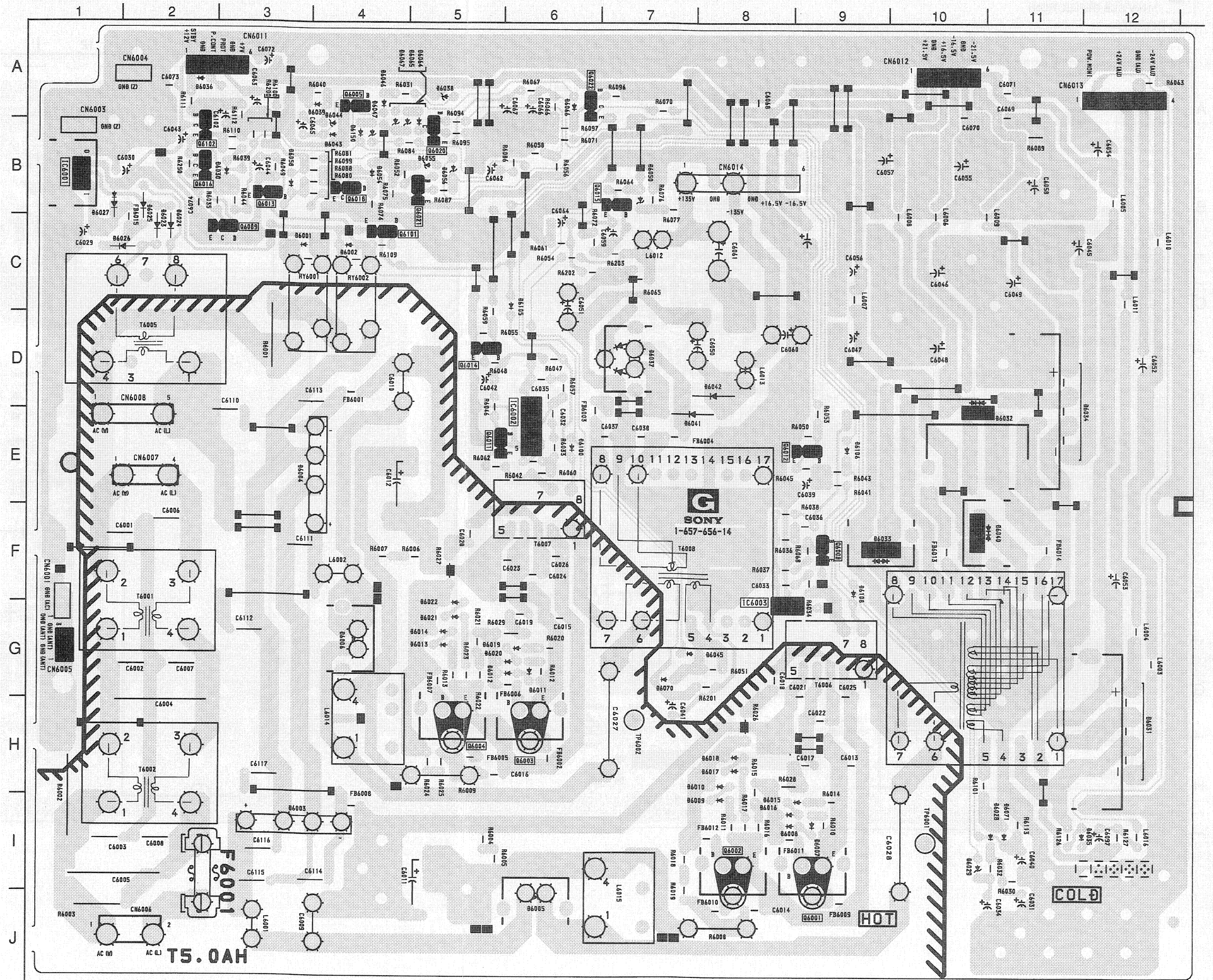
# G BOARD

DIODE	*	D6044	B-4
D6001	C-3	D6045	G-7
D6002	C-4	D6046	A-4
D6003	I-3	D6047	B-4
D6004	E-4	D6050	B-7
D6005	J-6	D6054	B-4
D6006	G-4	D6055	B-5
D6007	I-9	D6056	B-5
D6008	I-8	D6058	B-3
D6009	I-8	D6064	B-5
D6010	H-8	D6065	B-4
D6011	G-6	D6066	A-6
D6012	G-6	D6067	B-4
D6013	G-5	D6070	G-7
D6014	G-5	D6100	E-6
D6015	I-9	D6105	D-6
D6016	I-8	D6106	E-9
D6017	H-8	D6108	F-9
D6018	H-8	D6150	B-4
D6019	G-6		
D6020	G-6	IC	
D6021	G-5	IC6001	B-1
D6022	G-5	IC6002	E-6
D6023	C-2	IC6003	G-8
D6024	C-2	TRANSISTOR	*
D6025	B-2	Q6001	J-9
D6026	C-1	Q6002	I-8
D6027	B-1	Q6003	H-6
D6028	I-10	Q6004	H-5
D6029	I-10	Q6005	A-4
D6030	B-3	Q6008	F-9
D6031	H-12	Q6009	C-3
D6032	E-10	Q6011	E-5
D6033	F-9	Q6012	E-9
D6035	I-11	Q6013	B-3
D6036	A-2	Q6014	D-5
D6037	D-7	Q6015	B-7
D6038	A-5	Q6016	B-2
D6039	A-4	Q6018	B-4
D6040	F-10	Q6020	B-5
D6041	E-7	Q6021	B-5
D6042	D-8	Q6022	A-6
D6043	B-4	Q6101	C-4
		Q6102	B-2

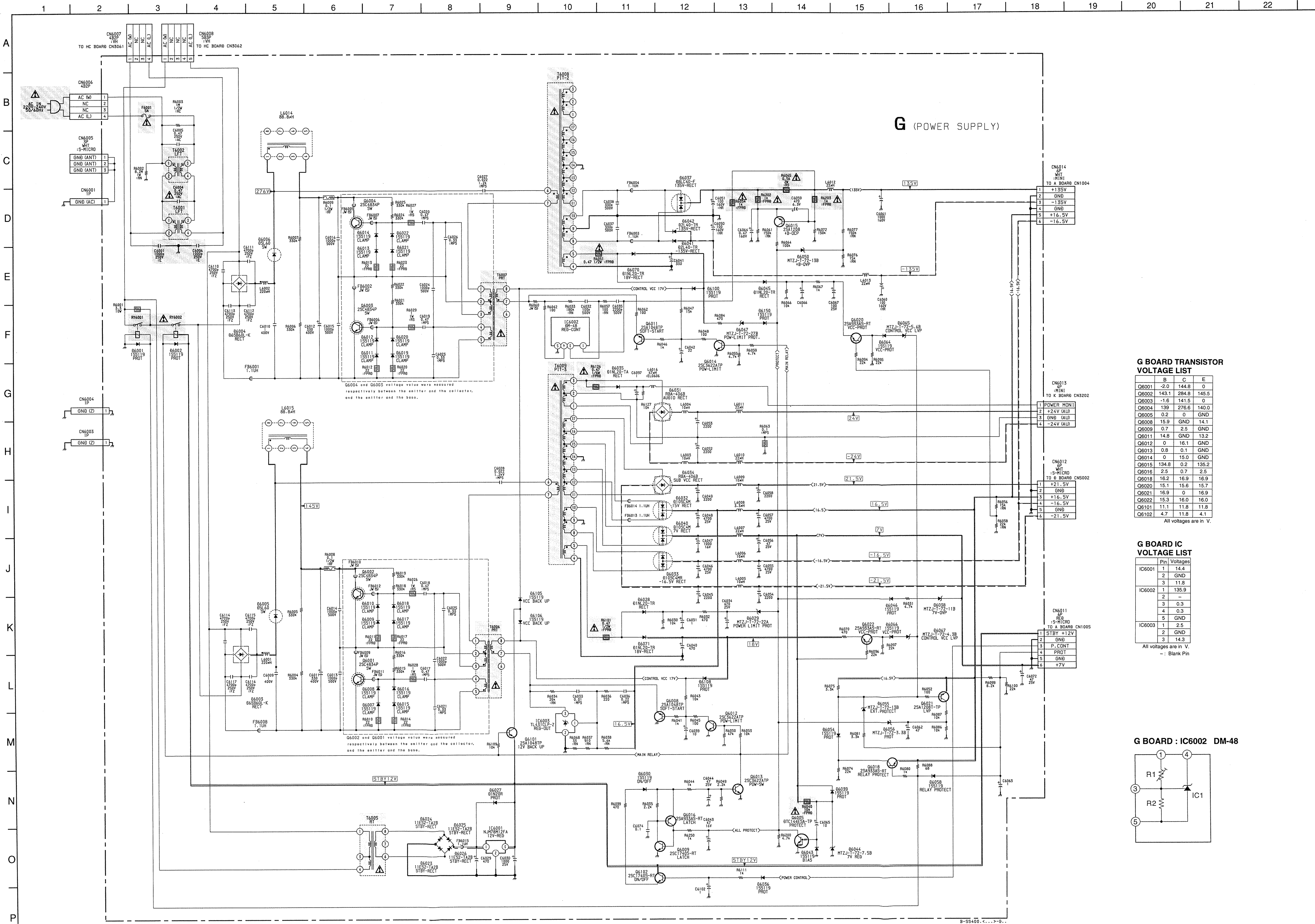
- G BOARD -

G

[POWER SUPPLY]







### G BOARD TRANSISTOR VOLTAGE LIST

Q	B	C	E
Q6001	-2.0	144.8	0
Q6002	143.1	284.8	145.5
Q6003	-1.6	141.5	0
Q6004	139	276.6	140.0
Q6005	0.2	0	GND
Q6008	15.9	GND	14.1
Q6009	0.7	2.5	GND
Q6011	14.8	GND	13.2
Q6012	0	16.1	GND
Q6013	0.8	0.1	GND
Q6014	0	15.0	GND
Q6015	134.8	0.2	135.2
Q6016	2.5	0.7	2.5
Q6018	16.2	16.9	16.9
Q6020	15.1	15.6	15.7
Q6021	16.9	0	16.9
Q6022	15.3	16.0	16.0
Q6101	11.1	11.8	11.8
Q6102	4.7	11.8	4.1

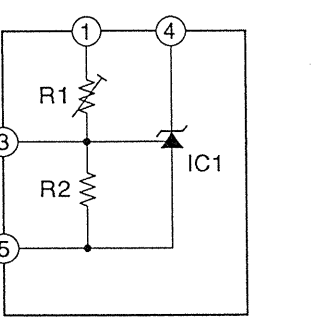
All voltages are in V.

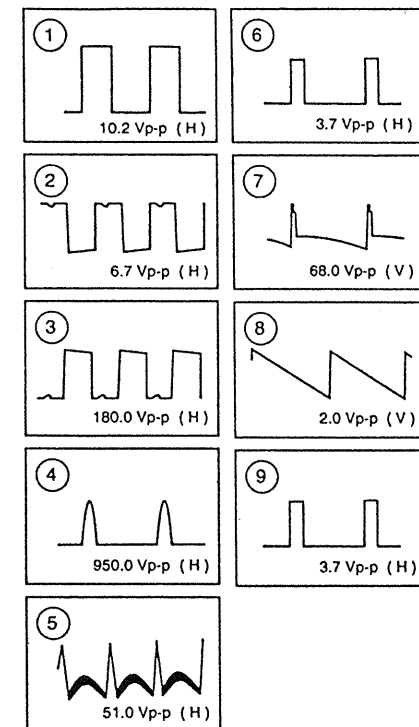
### G BOARD IC VOLTAGE LIST

IC	Pin	Voltages
IC6001	1	14.4
	2	GND
	3	11.8
IC6002	1	135.9
	2	-
	3	0.3
IC6003	1	2.5
	2	GND
	3	14.3

All voltages are in V.  
-: Blank Pin

### G BOARD : IC6002 DM-48

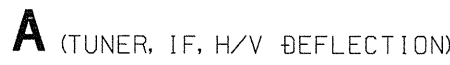




	B	C	E
Q1001	4.0	0	2.9
Q1002	0	0	GND
Q1003	4.0	GND	4.6
Q1005	4.6	0.8	4.9
Q1006	4.6	8.7	4.0
Q1401	0.7	0.1	GND
Q1402	12.3	2.4	12.3
Q1501	0	0	GND
Q1502	0.7	0.1	GND
Q1503	2.4	10.4	1.8
Q1504	3.9	GND	4.6
Q1505	9.8	2.3	10.4
Q1508	-2.9	88.3	GND
Q1509	2.3	GND	3.0
Q1510	0.3	GND	0.9
Q1511	1.5	12.3	0.9
Q1512	0	0.3	0
Q1513	2.9	-65.8	3.5
Q1514	0	12.3	0
Q1515	-122.7	1.1	-122.4
Q1516	3.0	-114.4	3.5
Q1517	-114.3	-137.1	-118.0
Q1518	-116.7	-137.1	-122.4
Q1519	12.3	0.8	12.3
Q1601	5.9	10.3	5.0

	Pin	Voltages
IC1401	1	1.1
	2	16.5
	3	-15.6
	4	-17.2
	5	0.7
IC1601	6	16.2
	7	1.2
	1	8.3
IC1602	2	5.0
	3	GND
	4	8.3
IC1603	1	8.3
	2	5.0
	3	GND
IC1604	4	8.3
	I	-17.5
	G	GND
IC1605	O	-12.0
	1	15.6
	2	12.3
IC1606	3	GND
	4	15.6
	1	12.2
IC1607	2	9.0
	3	GND
	4	12.2
IC1608	I	9.0
	G	GND
	O	5.0

All voltages are in V.

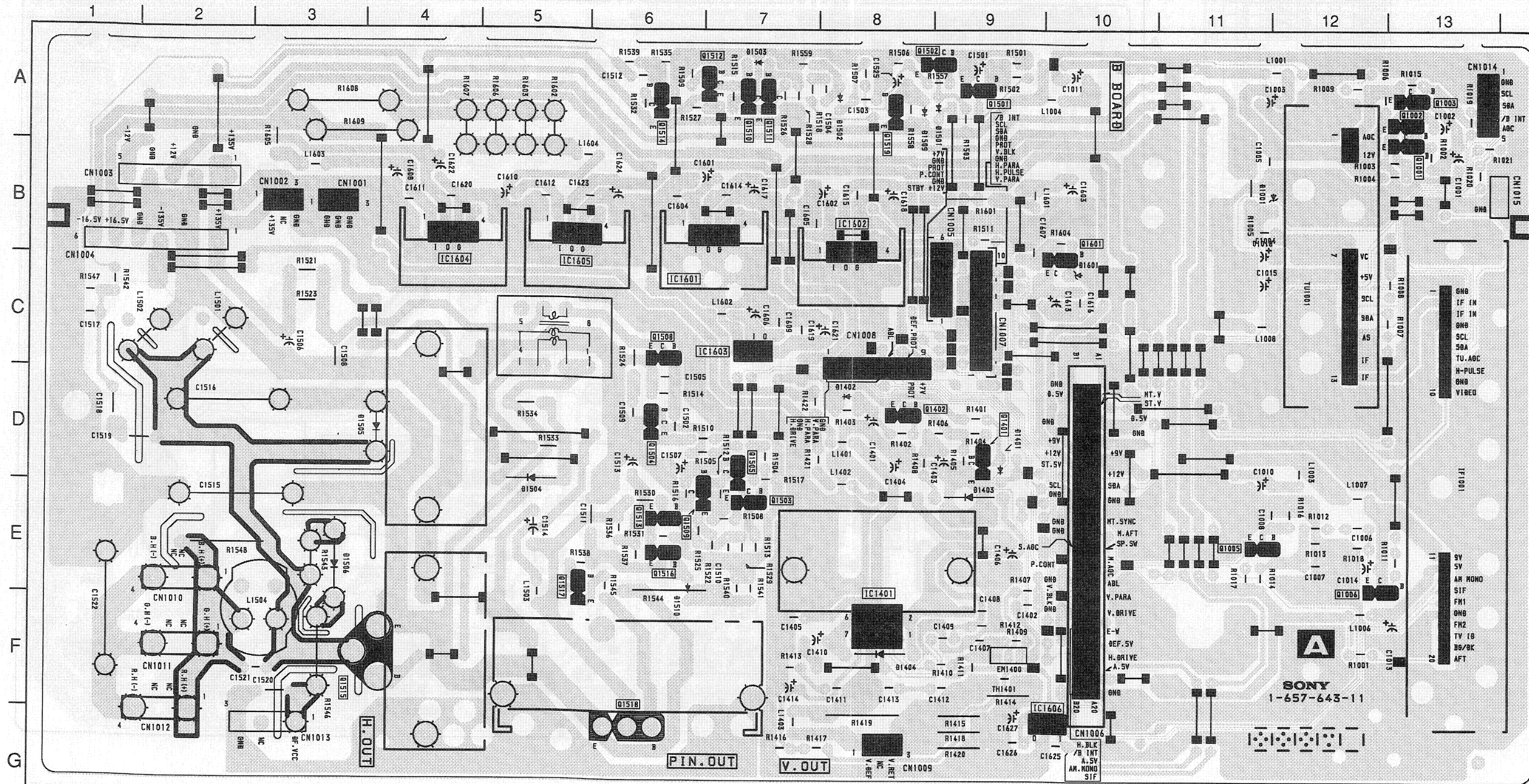




**A**

TUNER, IF,  
H/V DEFLECTION

- A BOARD -



**A BOARD**

DIODE	*
D1001	B-12
D1401	D-9
D1402	D-8
D1403	E-9
D1404	F-8
D1501	A-9
D1502	A-8
D1503	A-7
D1504	E-5
D1505	D-4
D1506	E-3
D1509	A-8
D1510	E-6
D1601	C-10

IC	*
IC1401	F-8
IC1601	B-7
IC1602	B-8
IC1603	C-7
IC1604	B-4
IC1605	B-5
IC1606	G-10

TRANSISTOR	*
Q1001	A-13
Q1002	A-13
Q1003	A-13
Q1005	E-11
Q1006	E-12
Q1401	D-9
Q1402	D-8
Q1501	A-9
Q1502	A-9
Q1503	E-7
Q1504	D-6
Q1505	D-7
Q1508	C-6
Q1509	E-6
Q1510	A-7
Q1511	A-7
Q1512	A-7
Q1513	E-6
Q1514	A-6
Q1515	F-4
Q1516	E-6
Q1517	E-5
Q1518	G-6
Q1519	A-8
Q1601	C-10

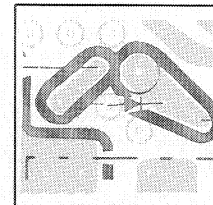
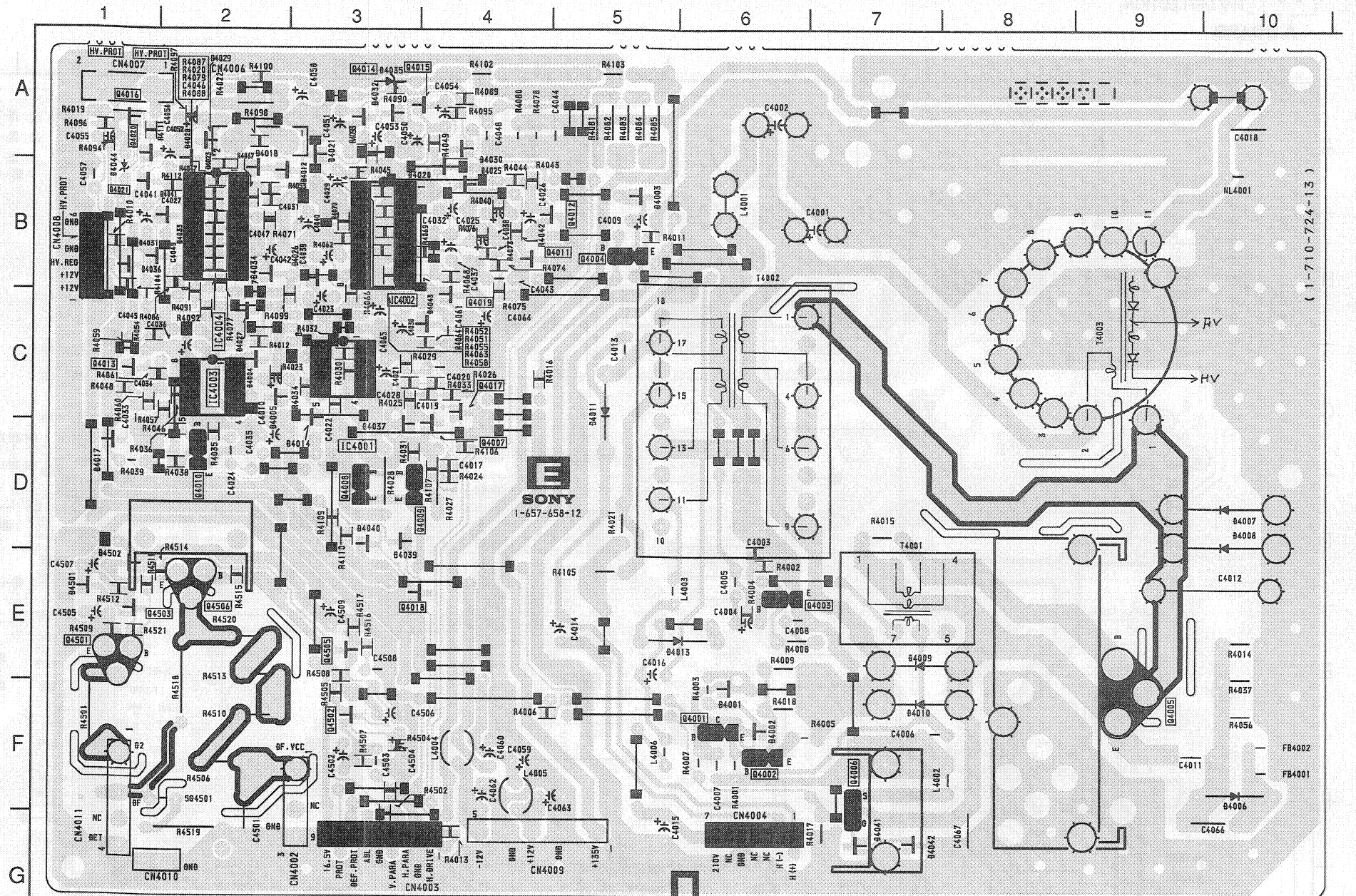


# E HV-REGULATOR, DYNAMIC FOCUS

- E BOARD -

## E BOARD

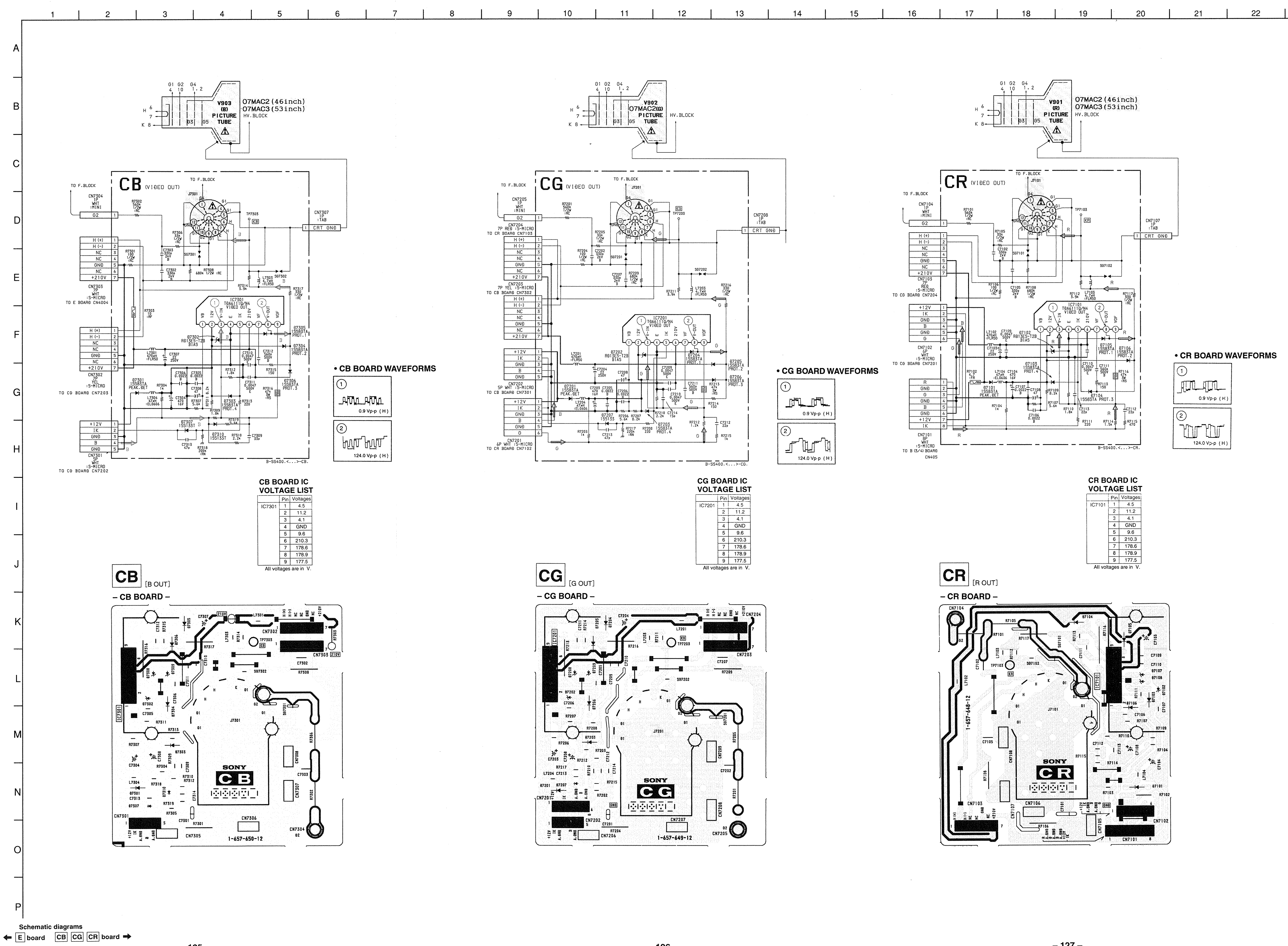
DIODE		*	D4043	C-4	⑧
D4001	F-6	④	D4044	B-1	—
D4002	F-6	⑧	D4501	E-1	⑧
D4003	B-5	⑧	D4502	E-1	⑧
D4004	C-2	⑧	I C		
D4005	C-2	④	IC4001	C-3	—
D4006	F-10	—	IC4002	B-3	—
D4007	D-10	—	IC4003	C-2	—
D4008	D-10	—	IC4004	B-2	—
D4009	F-7	—	TRANSISTOR		*
D4010	F-7	—	Q4001	F-6	—
D4011	C-5	—	Q4002	F-6	—
D4012	B-2	⑧	Q4003	E-6	—
D4013	E-5	④	Q4004	B-5	—
D4014	C-3	⑧	Q4005	F-9	—
D4017	D-1	⑧	Q4006	F-7	—
D4018	B-2	⑧	Q4007	D-4	①
D4020	B-4	⑧	Q4008	D-3	—
D4021	A-3	⑧	Q4009	D-3	—
D4023	B-2	④	Q4010	D-2	—
D4025	B-4	④	Q4011	B-4	①
D4026	B-3	④	Q4012	B-4	①
D4027	C-2	④	Q4013	C-1	①
D4028	A-2	④	Q4014	A-2	①
D4029	A-2	⑧	Q4015	A-4	①
D4030	A-4	⑧	Q4016	A-1	①
D4031	B-1	④	Q4017	C-4	①
D4032	A-3	⑧	Q4018	E-3	①
D4033	B-2	⑧	Q4019	C-4	①
D4034	B-2	④	Q4020	A-1	①
D4035	A-3	—	Q4021	B-1	③
D4036	B-1	④	Q4501	E-1	—
D4037	D-3	⑧	Q4502	F-3	①
D4039	D-3	⑧	Q4503	E-1	①
D4040	D-3	⑧	Q4505	E-3	①
D4041	G-7	④	Q4506	E-2	—
D4042	G-7	④			



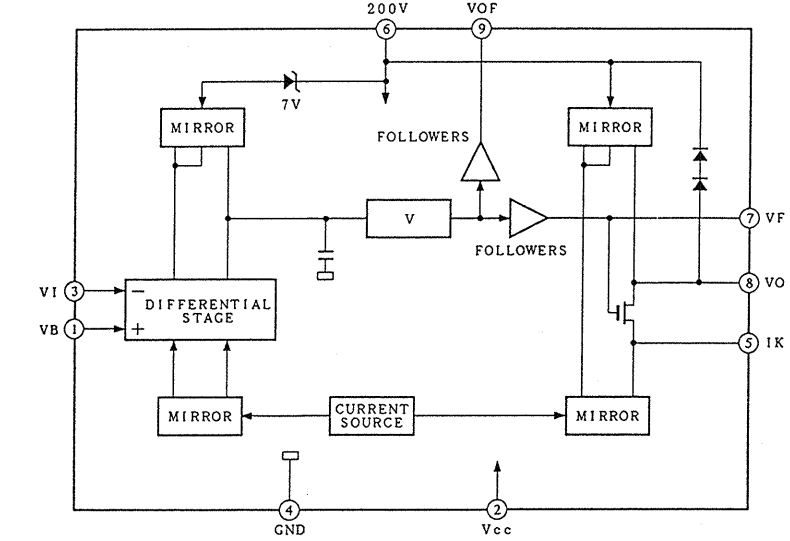
**NOTE:**  
The circuit indicated as left contains high voltage of over 600 Vp-p. Care must be paid to prevent an electric shock in inspection or repairing.



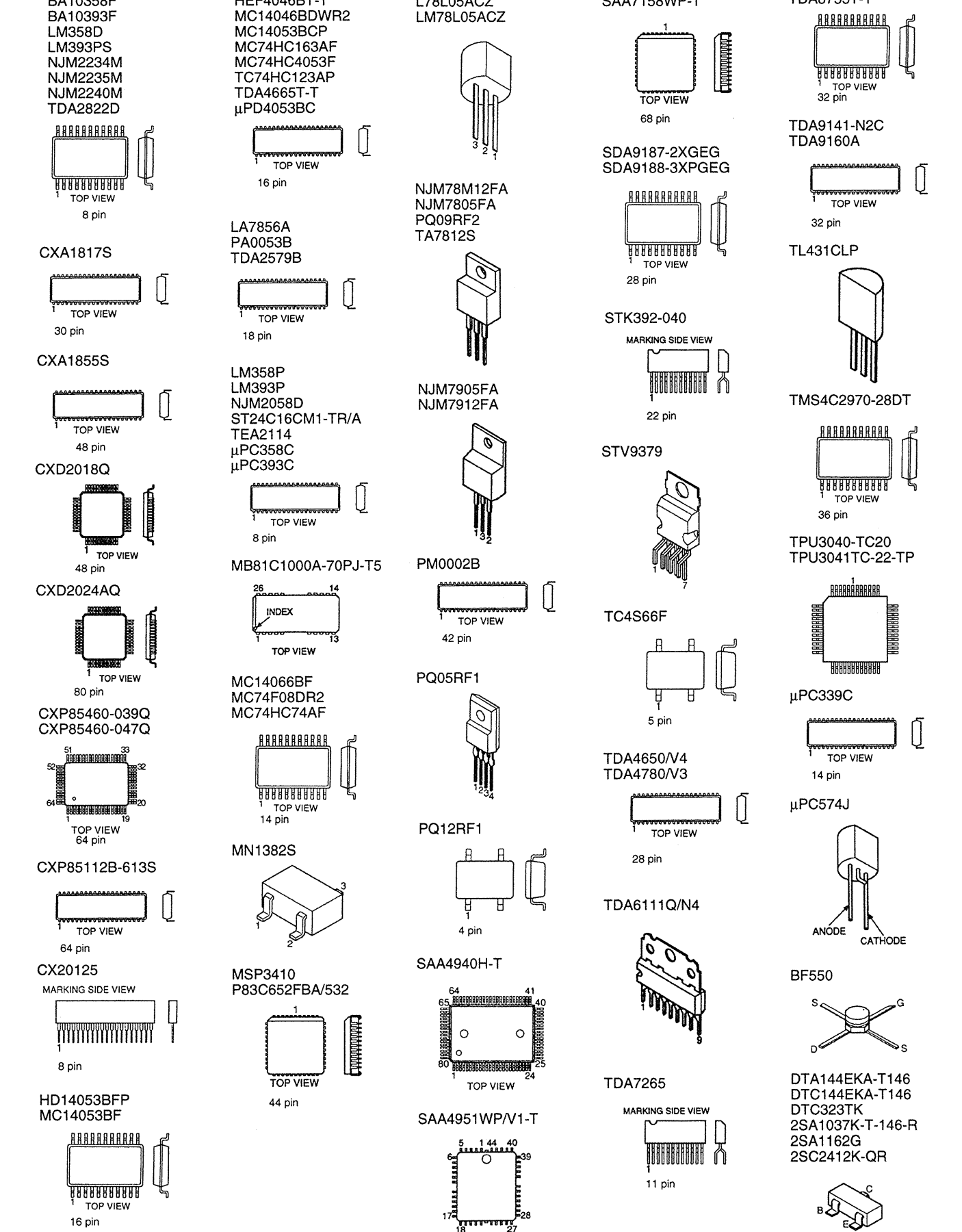




CB BOARD : IC7301 TDA6111Q/N4  
CG BOARD : IC7201 TDA6111Q/N4  
CR BOARD : IC7101 TDA6111Q/N4



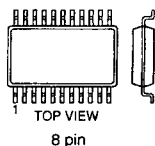
6-5. SEMICONDUCTORS



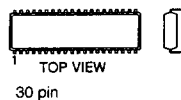


## 6-5. SEMICONDUCTORS

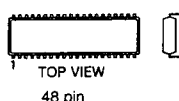
BA10358F  
BA10393F  
LM358D  
LM393PS  
NJM2234M  
NJM2235M  
NJM2240M  
TDA2822D



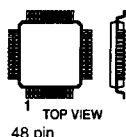
CXA1817S



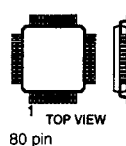
CXA1855S



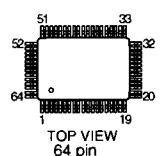
CXD2018Q



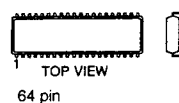
CXD2024AQ



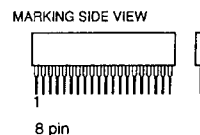
CXP85460-039Q  
CXP85460-047Q



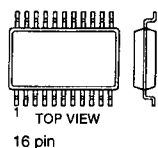
CXP85112B-613S



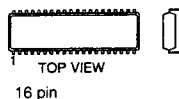
CX20125



HD14053BFP  
MC14053BF



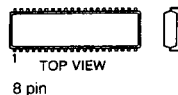
HEF4046BT-T  
MC14046BDWR2  
MC14053BCP  
MC74HC163AF  
MC74HC4053F  
TC74HC123AP  
TDA4665T-T  
 $\mu$ PD4053BC



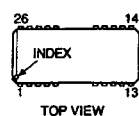
LA7856A  
PA0053B  
TDA2579B



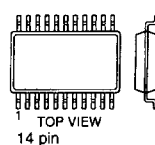
LM358P  
LM393P  
NJM2058D  
ST24C16CM1-TR/A  
TEA2114  
 $\mu$ PC358C  
 $\mu$ PC393C



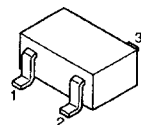
MB81C1000A-70PJ-T5



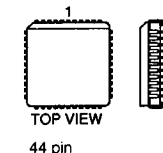
MC14066BF  
MC74F08DR2  
MC74HC74AF



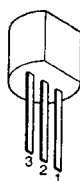
MN1382S



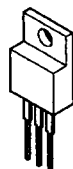
MSP3410  
P83C652FBA/532



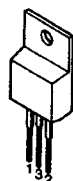
L78L05ACZ  
LM78L05ACZ



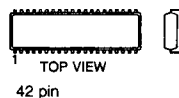
NJM78M12FA  
NJM7805FA  
PQ09RF2  
TA7812S



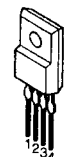
NJM7905FA  
NJM7912FA



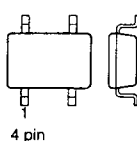
PM0002B



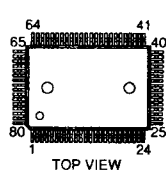
PQ05RF1



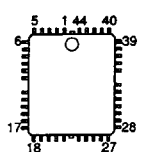
PQ12RF1



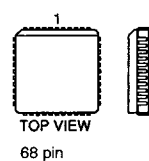
SAA4940H-T



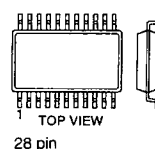
SAA4951WP/V1-T



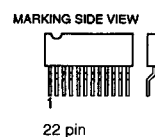
SAA7158WP-T



SDA9187-2XGEG  
SDA9188-3XPGEG



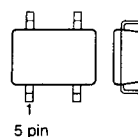
STK392-040



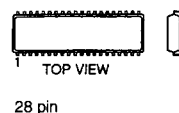
STV9379



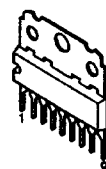
TC4S66F



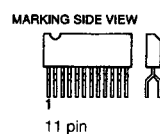
TDA4650/V4  
TDA4780/V3



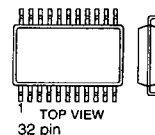
TDA6111Q/N4



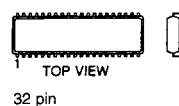
TDA7265



TDA8755T-T



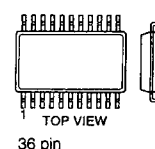
TDA9141-N2C  
TDA9160A



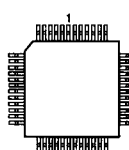
TL431CLP



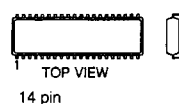
TMS4C2970-28DT



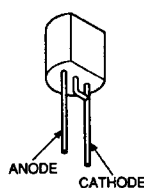
TPU3040-TC20  
TPU3041TC-22-TP



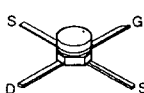
$\mu$ PC339C



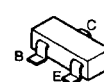
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BF550



DTA144EKA-T146  
DTC144EKA-T146  
DTC323TK  
2SA1037K-T-146-R  
2SA1162G  
2SC2412K-QR



DTA144ESA  
DTC144ESA-TP  
2SC1740S-R  
2SC3622A-LK



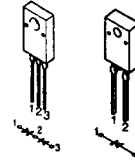
2SA933AS-QRT  
2SC2878-AB



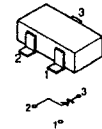
DAN202K



D10SC4M  
D8LC40



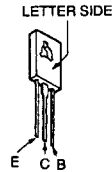
MA3024-TX  
MA3033-L  
MA3047-TX  
MA3051M  
MA3056M  
MA3075M-TX  
MA3091  
MA3130  
RD13M-B2  
RD4.7M-B2  
RD5.1M-B2  
RD5.6M-B2  
RD7.5M-B2



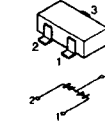
IRFI640  
2SA1837  
2SC4793



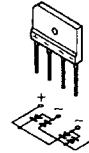
2SB649A  
2SC2688-LK



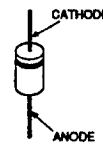
DAP202K



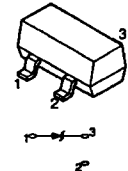
D6SB60L-K  
RBA-406B



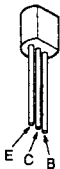
D2L40F  
D2L40-TA



MA3091M-TX



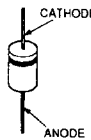
2SA1013-O  
2SA1208  
2SA1208S-TP



2SC1740S-R



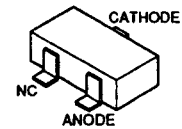
D1NL20  
EGP20G  
GP08  
GP08DPKG23  
HZZ33-02  
MTZ-T-72-22A  
MTZ-T-72-33D  
RD2.0SB-T1  
RGP02-20EL-6394  
RGP15GPKG23  
1SS83



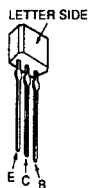
D5L60



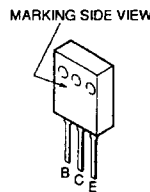
MA3240-TX



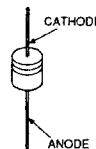
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2SA1175-HFE  
2SC2785-HFE



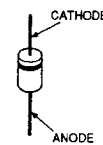
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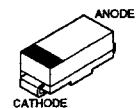
D1N20R  
MTZJ-11B  
MTZJ-4.3B  
MTZJ-5.6B  
MTZJ-5.6C  
MTZJ-T-72-13B  
MTZJ-T-72-27B  
MTZJ-T-72-3.3B  
MTZJ-T-72-5.6B  
MTZJ-T-72-7.5B  
RD11ES-B1  
RD13ES-B2  
RD22ES-B1  
RD27ES-B2  
RD33ES-B2  
RD39ES-B2  
RD4.3ES-B2  
RD5.6ES-B2  
1SS119-25TG  
1SS133  
11ES2



ERC06-15S  
ERC91-02  
S2LA20F



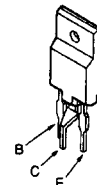
SC802-06



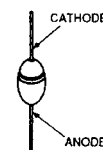
2SA1221-L  
2SA1221-T-M  
2SB733-34  
2SB734-T-4  
2SD774-34



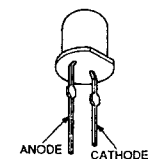
2SC4632LS-CB7



ERC38-06  
V19E



TLR124



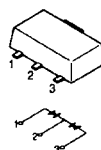
2SA1301-O



2SC4834P



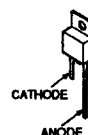
BAS16  
BBY40



D10SC4MR



ERD08M-15

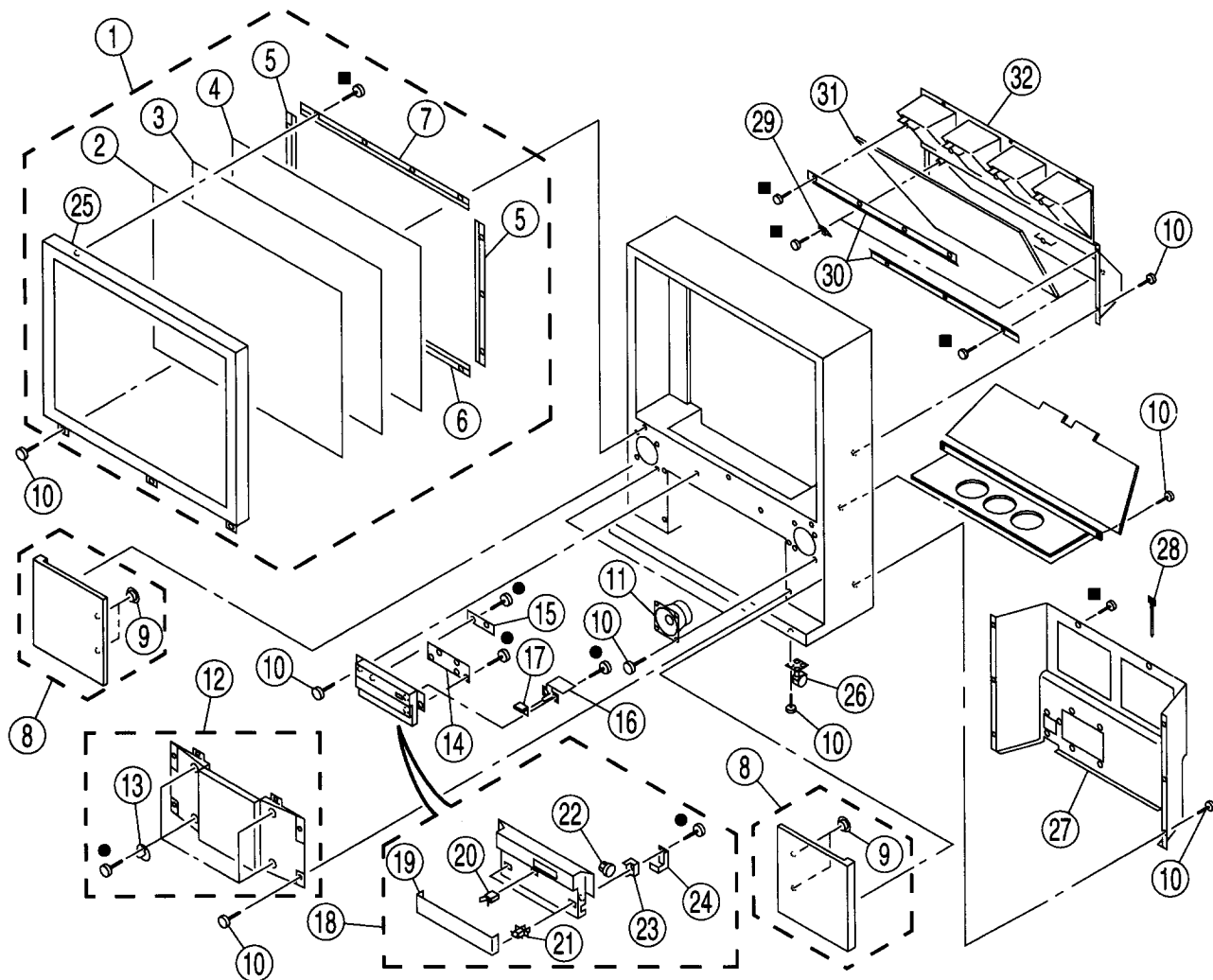


# 7-1. COVER (KP-46S4/46S4K/46S4U)

● : 7-685-648-79 +BVTP 3X12

■ : 7-685-663-79 +BVTP 4X16

sont critiques pour la sécurité.  
Ne les remplacer que par une  
pièce portant le numéro spécifié.



## 7-2. COVER (KP-53S4/53S4K/53S4U)

● : 7-685-648-79

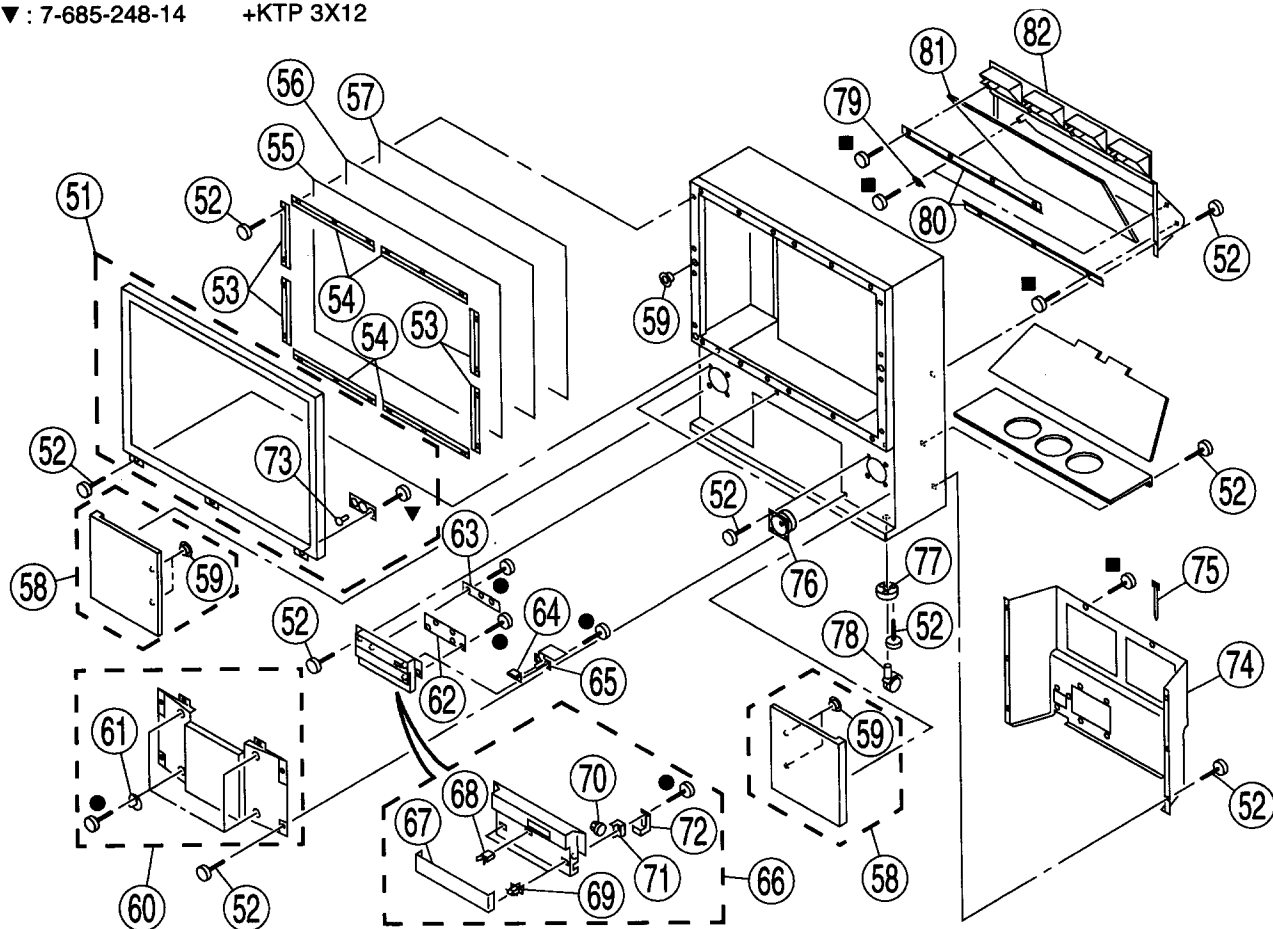
+BVTP 3X12

■ : 7-685-663-79

+BVTP 4X16

▼ : 7-685-248-14

+KTP 3X12



### 7-3. CHASSIS

● : 7-685-648-79

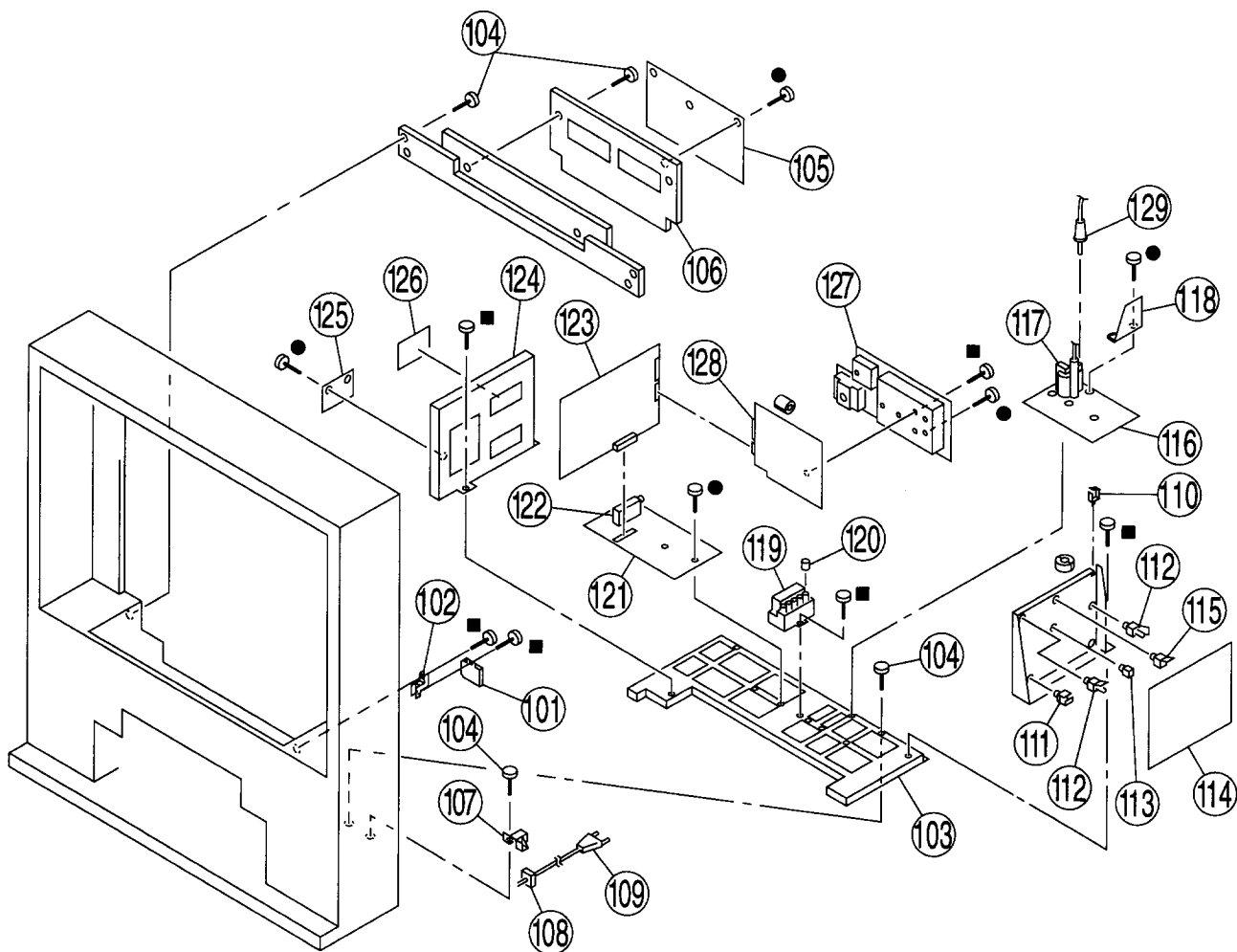
+BVTP 3X12

■ : 7-685-663-79

+BVTP 4X16

The components identified by shading and mark ! are critical for safety. Replace only with part number specified.

Les composants identifiés par une trame et une marque ! sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.



**7-4. PICTURE TUBE**

◇ : 7-685-663-71      +BVTP 4X16

The components identified by shading and mark **▲** are critical for safety. Replace only with part number specified.

Les composants identifiés par une trame et une marque **▲** sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

